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THE
QUARTERLY JOURNAL
OF
ECONOMICS

NOVEMBER, 1919

THE PRESENT AND FUTURE OF THE INTERNATIONAL TRADE OF THE UNITED STATES

SUMMARY

I. Unexampled excess of exports during 1915-19, 1. — II. Theoretical analysis of international lending and borrowing under ordinary conditions, 2. — Peculiar conditions in United States during the war, 3. — Influx of gold and rise in prices, 5. — All the transactions in substance were *within* the United States, 6. — An overturn inevitable, 7. — III. New stage of international payments and trade to be expected, 8. — Tourist expenditures, 9. — Immigrants' remittances, 9. — Freight charges, 10. — Interest account, 11. — Capital account, 12. — The general outcome, 13. — IV. The probable course of prices and money incomes, theoretical analysis, 14. — Extraordinarily rapid overturn, 17. — Relation to world price level, 19. — Probable maintenance of gold standard and resumption of special payments, 20. — Conclusion, 20.

I

THE outstanding feature of the international trade of the United States during recent years has been the enormous excess of merchandise exports. The figures, familiar tho they are, remain astounding. During the five fiscal years from June 30, 1914, to June 30, 1919, the exports exceeded the imports, on the average, by nearly three billion dollars each year. In the amounts of these

"favorable" balances, as well as in their character, the phenomena are unexampled.[1]

The exports stand mainly for loans. True, during the first year or two of the European war they were paid for, in part at least, by cash remittance. Gold was sent to the United States; and here again the amounts were quite beyond anything before experienced in the world's history. But these remittances, extraordinary as they were, could not liquidate the obligations for the enormous excess of exports. Loans were arranged, beginning with the Anglo-French loan of 1915, and followed by other issues of similar character. After the entrance of the United States into the war in the spring of 1917, the lending process still continued, but through a different channel. Our government undertook on its own account the advances which served to finance the ever-mounting volume of exports. No transactions comparable to these have ever appeared in the history of international lending and borrowing. The problems which they present are significant both for economic theory and for the practical exigencies of the present and the immediate future. In the following pages I shall endeavor to analyze them from the point of view both of theory and of workaday significance.

II

First, the theoretical problems. How may international loans be expected to influence the trade between the lending and borrowing countries?

Under the conditions which are normally assumed in economic theory — an existing equilibrium of merchandise imports and exports, no other intervening factors —

[1] For a detailed examination and careful analysis of the figures see the papers on the "Balance of Trade of the United States" in the Review of Economic Statistics for July, 1919.

the first phase in the operations would be an outflow of specie from the lending country. That country would tend to have prices and incomes lower than before, or, what comes to the same thing, prices and incomes remaining low if in the world at large the movement should happen to be upward. The reverse tendency would appear in the borrowing country. The double change would have the effect of stimulating the movement of goods from the lending country and bringing about an excess of exports over imports. The stimulus to merchandise exports might take place in even more direct fashion, through the circumstance that the banking and financing houses might be interested also in enterprises manufacturing for export. The details of the possible variants of these comparatively simple transactions need not detain us here. Suffice it to say that the trend toward increasing merchandise exports from the lending country and toward a " favorable " balance of trade is a familiar phenomenon. Indeed, it appears in actual experience even more promptly and unmistakably than the theoretical analysis might lead one to expect. The characteristic to which attention is to be directed here is that the foreign demand for goods *follows* the loans, or at best accompanies the loans, and that the primary moving impulse is the loan itself, the foreign demand for exports being a consequence or accompaniment.

In the operations which we are here following, however, the case is different. The moving cause in this case was the initial and enormous demand for American goods. The loans were consequence, not cause. The stage preceding the loans, and subsequently affected by them, was not a stage of equilibrium, but one of great excitement and instability — abnormal foreign demand, inflowing gold, rising prices. The loans caused no out-

flow of specie; they served first to check in some degree the inflow of specie and in the end to prevent it completely. They were at no time either followed or accompanied by a tendency to lower prices in the lending country. Their effect was only to stay the tide of rising prices. In other words, the theoretical analysis which would be applied to the ordinary or normal conditions must, in this case, be supplemented by taking account of a complicating circumstance — an almost insatiable demand for the exports of the United States. And it was in consequence of that demand that the United States came to be a lending country.

The forces were not only complex; they were also enormous in volume. The ordinary mechanism of adjustment proved quite inadequate for regulating this cataclysmic overturn. It was simply impossible to find anywhere in the world means of remittance, of the usual kind, sufficient in amount to provide payment for the exports demanded from the United States. The orthodox analysis of the case is that an excess of exports will be paid for by inflow of specie, continuing until changes in prices lead to the reëstablishment of equilibrium. But nothing of this kind was possible. If the gold flow into the United States had been allowed to continue until it thus came automatically to an end, all the available gold in allied countries would have been carried to the United States, and yet without bringing its own remedy. Here, as in so many other cases, time is of crucial importance. If the process had been spread over a decade or two, the results contemplated by theory would presumably have come about. Given time enough, prices and merchandise imports and exports would have shifted in the predicted way. But so enormous a movement, concentrated in so short a period, was quite beyond the capacity of the ordinary channels

of commerce and trade. It would not be accurate to say that in such case economic theory breaks down. The case was simply so extraordinary both in volume and in character as never to have been contemplated in theory.

A word now as to the causes of the rise in prices which in this case preceded the international loans, and, as has just been noted, was checked by the loans. Two periods are to be distinguished; first, that of loans financed by banking houses; and second, that in which the loans were financed by our government itself.

During the first stage the underlying cause of the rising prices was the inflow of gold. In the course of the calendar years 1915 and 1916 a round billion of dollars in gold was imported. I need not enter here on the thorny questions concerning the precise way in which such an inflow affects prices. One may freely admit that a rise in prices might have taken place without it, and also that even with it an immediate rise in prices would not necessarily appear. But all will agree that the great influx of specie during 1915 and 1916, the consequent redundance of bank reserves, and the ease with which the Federal Reserve System was enabled to bring about an increase both of bank deposits and of notes, made possible a rise in prices that would otherwise have met with serious obstacles. And the accumulation of specie which took place during this first period served also to make possible the continuation and enhancement of the rise which marked the second period. The enormous loans of the government, connected as they were with mounting bank loans and bank deposits, led to unmistakable inflation. That term is perhaps not fairly applicable to the first period, when "natural" events, not government action, constituted the main heightening force. Certainly during the second period, when the successive loans of the government had such

far-reaching effects in the business and financial world, there was plain inflation. And that inflation could hardly have taken place to so great an extent but for the preceding inflow and accumulation of specie. It was this which encouraged the Federal Reserve Board to go ahead and substitute reserve notes for government notes, and to sanction without hesitation the ever-increasing volume of bank operations. If the first stage had come to an end without further developments — if, for example, the war had ceased in the spring of 1917 and the United States had never been called on to enter it — the lending process, if continued by private agencies, might have served to check the tide of rising prices in the United States. As matters turned out, the second stage, during which the United States entered the war and itself financed the international loans through great domestic borrowings of its own, was characterized not by any maintenance of prices at the level at which they then stood, but by an accelerated and accentuated upward movement. And that upward movement, it need not be said, did not cease with the armistice and the cessation of military operations. The government's loans to the Allies and the peoples of Europe continued, and further internal loans were forthcoming.

Through it all, from the beginning of the lending operations in 1915 to their close, what we really did was to *buy from each other*. It is common to speak of our enormous exports and of the enormous foreign demand for our exports as if these were causes of prosperity. The plain facts are that the foreign demand for our exports and the foreign payment for our exports were all on paper. True, the foreigners must have the goods and must pay for them. But the wherewithal to pay for them was furnished to the foreigners by our own

people. In effect the payments were made by one set of our own people to another set. All that the foreigners really did was to send us certificates of indebtedness in one form or another — promises to pay, which will have an influence on the substance of our international trade only in the years to come.

This state of things cannot persist. The process of ever-repeated loans will inevitably come to an end. With it the enormous excess of exports over imports will come to an end. No rational person can suppose that such an abnormal state of international trade as we had in 1916–19 can continue indefinitely. An overturn must come. It may come with something of a crash and with the familiar accompaniments of a commercial crisis. We may fairly expect, however, that the Federal Reserve System, now well developed and well established, will serve to prevent any such complete collapse of the credit structure as in former times marked the beginning of a new economic cycle. But it is difficult to see how the ordinary accompaniments of such an overturn are to be avoided. We may expect a fall in prices and in stock exchange securities, industrial depression, declining prices, and declining incomes. He would be rash who would venture to predict how great or how long would be the depression, how considerable the fall in prices. It is hardly to be supposed that a range of prices as low as that of the pre-war period will be reached for a long time to come. But all indications are that we shall find ourselves below the maximum of the present and immediate past. An essential and conspicuous part of the change will be the readjustment of international trade, the cessation of the artificial and necessarily temporary preponderance of exports, and a shift both in imports and exports such as to bring about something like a normal situation.

III

What now will this readjusted and more normal condition of international trade prove to be? Prediction, or rather speculation, will best proceed by comparing the several factors which entered into our international trade before the war with the same or similar factors as they may be expected to operate during the years to come.

The continuing excess of merchandise exports over imports during the pre-war period is again a familiar phenomenon. A large "favorable" balance was maintained continuously for the forty years from 1873 to 1913. It served to meet the various obligations which the people of the United States incurred to those of foreign countries. What was substantially a state of equilibrium had been attained. The merchandise transactions served to equalize payments without any sustained flow of specie in one direction or the other. The movement of gold was merely such as to meet the fluctuations which must appear in individual years, and left the supply of the United States untouched except so far as it was increased by the accumulation of the domestic output from the mines. We need not stop to inquire how far this equilibrium was arrived at through the process which the orthodox theory of international trade describes. For myself I believe in the main that it was so reached. But reached it was, as fully as is likely to be the case for any considerable period. The question before us is what new sort of equilibrium may be expected during the period to come. Allowance must always be made for fluctuations or irregularities in individual years; we are concerned with the general trend.

The main " invisible " items which affected our international trade and international payments during the pre-war period were four; tourists' expenditures, immigrants' remittances, freight charges, and interest and profits payable to foreigners. What can be said of the probable increase or decrease of these several items in years to come ?

Tourists' expenditures seem likely to become larger. During the pre-war period it was supposed that they amounted to an average of about $150,000,000 a year. With the growth of wealth and population they would be likely to increase under any circumstances. For some years to come they would seem likely to increase at even more than the normal rate. During four years no tourists have gone abroad; there is an accumulation of persons looking forward to a first trip or to a repetition of previous trips. A wish to see the sites of war will add to the exodus. No doubt the greater or less activity of business and the greater or less prosperity dependent upon business changes will cause the movement to fluctuate from year to year. But on the whole it may be expected to be substantially larger than in the past. There will ensue a consequent need of increasing remittances to foreign countries.

A similar tendency may be expected in remittances made by immigrants. These were an astonishingly large item during the decade preceding the war. The annual amount sent out was something like $200,000,000 a year. In the popular mind this was conceived as so much cash and was spoken of (in that mercantilist fashion which it seems impossible to uproot) as the loss of so much wealth to the country. In effect it meant that the Italians, the Irish, the Poles, and the Greeks supplied the wherewithal for buying American cotton and grain and iron and copper—goods which were ex-

ported and the proceeds of whose sale abroad enabled payments to be made to the relatives in the far-distant countries. That process probably will be resumed and enlarged, at least for some years to come. The United States will be more prosperous than European countries. The call for aid from relatives and parents will be more appealing than ever.

It must be admitted, however, that prediction in this matter is rash. Now that the illiteracy test is in effect, the bird of passage immigrant will be a less important figure than before, and less will be taken home by his kind than was formerly the case. The same factor will militate against another type of remittance, namely, that by which " money " was sent abroad for enabling relatives to join those already established here. Perhaps too the return movement of those immigrants who, tho not birds of passage in the strict sense, nevertheless return to the old country with their earnings after having sojourned in the United States for a number of years, will be less in consequence of the uneasy conditions likely to prevail on the Continent for some years to come. Stable political and social conditions in Europe, on the other hand, will tend to make this movement larger. Everyone is at liberty to make his own guess. It is quite within the bounds of possibility that after all this factor during the next ten years will prove to be not of greater quantitative importance than before the war, but of less.

Next as regards shipping. The case here is clearer. The United States has embarked on a great scale in shipping enterprises, and for some years freight charges will no longer constitute a debit item. Probably they will also not constitute a credit item. Our imports and exports will not be carried exclusively in American ships; they will be carried both in American and in foreign.

On this score accounts will probably balance. Something will need to be paid by us to foreign countries on freight account, and something will be received by American shipowners on that account. The two sides of the item will approximately balance. At all events, no such debit charge as that of pre-war times will have to be met.

Most predictable of all is the nature of the change that will take place in the interest and profits account. Here something like a complete reversal would seem to be inevitable. In the oft repeated phrase, the United States is no longer a debtor country but a creditor country. The remittances on this score will be preponderantly to the United States, not out of the United States. But the quantitative result is impossible to gauge. Unquestionably there will be a sharp reduction in interest remittances from the United States to foreign countries, perhaps so great as to amount virtually to complete cessation. The remittances on the other hand from Europe to the United States on interest account will be heavy. The great items will be those arising from public remittances — from the loans which European governments have contracted, whether to our own government or directly to our investing public. The possibility cannot be excluded that the interest charges due to our government may be postponed, conceivably even forgiven entirely. But the balance on interest account, whatever its amount may be, will cause remittances to be made to the United States, not from the United States, and therefore will tend, so far as this item is concerned, to bring an excess of merchandise imports and no longer an excess of merchandise exports.

A further item to be considered is the international movement on capital account. Before the war the United States was still, on the whole, a borrowing coun-

try. It is true that the process of making investments abroad, more particularly in non-European countries, had already set in. But the net transactions on capital account had been such as to leave the United States a borrowing country, and to make this item a credit one in our international account. A common popular fallacy on this score is that a " borrowing " or " debtor " country necessarily has an excess of exports, a lending or " creditor " country an excess of imports. Such is the case, as needs hardly be said to the conversant reader, only when a country has been in the creditor position for a prolonged period, even for generations. During the earlier stages of lending or of being a creditor country, the effect on international trade is precisely the reverse of that so often assumed in popular discussion. During this earlier stage the lending country has an excess of exports, the borrowing country an excess of imports. Only when, as in the familiar cases of Great Britain and France during the last half of the nineteenth century, the processes of lending and borrowing have been maintained for many years, does the creditor country show a balance of merchandise imports; and only when the borrowing country has been a borrower for a long period, does it have a balance of merchandise exports.

Obviously the recent changes of the United States in this regard have been quite extraordinary and unprecedented. We have jumped during the short period of three years from one position to another quite the reverse. A shift which would be expected to require at least a generation has been made in a triennium. There has been a sudden reversal, not a gradual transition. Now that the main shift has taken place, there may be complementary changes, and more especially a flow of investment and consequent remittance to foreign coun-

tries. Standing alone, such remittance on capital account would lead to an excess of merchandise exports from the United States. Side by side with it, however, will be the process of remittances *to* the United States from foreign countries on interest account. What will be the quantitative balance between the two no one can venture to predict. I do not myself look forward to so vast or rapid increase in American investments in foreign countries as do some of our financial writers and experts. It is obvious that the process cannot possibly be maintained on anything like the scale of the last year or two, nor can it lead to merchandise exports on the same scale. The most that can be expected from our becoming a lending country is a partial offset to the other side of the account, namely that by which interest and profits will have to be remitted from foreign countries to our own shores.

Speculative as must be the outcome for each of these four items, the final outcome for our international trade as a whole necessarily is still more speculative. The best guess would seem to be that the United States will maintain an excess of merchandise exports, but not so great an excess as that which characterized the twenty years preceding the war. We shall have a favorable "balance of trade," but one not so favorable as before. Our prosperity boomers will not be able to speak so unctuously of our great reserves of credit abroad and our great accumulations of resources. Needless to say, there will be marked variations from year to year. There will be the recurring seasonal fluctuations in the crops, and there will be shifts in financial and industrial conditions. Very possibly some years will show an excess of imports, others an unusual excess of exports. Looking over the ten years from 1920 to 1930 the outlook is for some continuing excess of merchandise exports over

merchandise imports. But it would seem impossible that the annual excess should be on the average at all so great as that of the decades preceding the war. In the end — supposing no new factors to enter before this final stage is reached — the accumulation of interest payments will bring about an excess of imports.

IV

Still another set of questions arises. What may be expected to be the course of prices in the United States, and what the course of money incomes?

First, the theory of the matter. In general it is to be expected that during a process of expanding imports a country will have prices relatively high. It is only when the conditions for sale within a country are favorable that imports can be expected to enlarge. Conversely, a process of expanding exports may be expected to be coincident with a period of prices relatively low. Exports obviously are promoted when the conditions within a country are favorable for purchase.

These general statements need a word of explanation. The terms "high prices" and "low prices," when used in this connection, have reference to previous conditions within the same country, and make no comparison with other countries. An increase of imports in a given country is induced by prices higher than they were before in that country; which does not necessarily mean a range of prices higher than elsewhere. Increasing exports, conversely, are stimulated by prices lower than they were before in the same country; which again does not necessarily mean that the general range of prices in that country is lower than elsewhere. It is obvious that the prices of the particular articles that enter into international trade — they may be styled the

" international commodities " — whether they be imported or exported, will be substantially the same (barring transportation charges and customs duties) throughout the several trading countries. Their movement from one country to another will be affected by the general course of other prices and of money incomes within the several countries. This course will be upward or downward within each country, both for the international commodities and for those solely within the range of domestic transactions, in sympathy with the general conditions of international trade. A general upward swing tempts imports; a downward swing stimulates exports. True, the inflowing imports operate to check the rise, but they continue until it is checked. And conversely, while the outgoing exports operate to check the fall, they continue until the check does come.

Lending operations, alone and by themselves, signify a tendency to increasing exports induced by prices comparatively low. Borrowing, on the other hand, means in the same way a tendency to increasing imports induced by prices comparatively high. " Alone and by themselves " — in this sense and subject to this restriction the propositions hold good. A country whose trade has been in equilibrium, which starts on a lending career, and in which no other new factors affect the situation, must make remittances to foreign parts, and soon will reach the stage of effecting them through the export of goods. A country which under similar conditions starts on a borrowing career will soon reach the stage of increasing imports tempted by rising prices, and will soon have an " unfavorable " trade balance.

Consider now the way in which these opposite transactions formerly took place in the United States, and the way in which they are likely to take place in the future. During the pre-war period the United States

still was a borrowing country. Thereby it was under the influence of a factor which, so far as it went, promoted advancing prices and imports. On the other hand, as has already been explained, during this same period there were preponderant other factors, among them the accumulated interest on old loans, working in the opposite direction. Our borrowing, at all events, may now be expected to cease. If there be new transactions on capital account, they will be rather in the opposite direction. The fresh loans will be from the United States, not to the United States. And yet in this reversed case, the net outcome of international financing is likely again to be that other factors will outweigh and completely counteract the new transactions on capital account. Just as interest remittances *from* the United States on account of past loans had offset the pre-war borrowing, so interest remittances *to* the United States will probably offset post-war lending. So rapid and enormous have been the loans of the war period that the interest remittances one way are likely to exceed the capital remittances the other. The net outcome of the international lending in both cases proves to be such as to cancel the effect which borrowing alone would have. The balance, as regards this connected pair of operations, will be the other way from what it was before the war. International credit operations will tend to rising prices and swelling imports.

In other words, the extraordinary overturn in credit relations means the disappearance of what was formerly an export-inducing factor. Remittances will no longer have to be made in anything like the volume of pre-war times from the United States to Europe on account of interest and profits derived from foreign investments in this country. The only way in which international financing might continue to work in this same direction

would be through large fresh loans on capital account from the United States to European countries; in other words, through a reversal of our position not only on income account, but on capital account as well. I have already expressed my skepticism with regard to the common expectation that loans will be made by the United States on a great scale during the immediate future,—no longer for purposes connected with the war but for the ordinary purposes of investment. Doubtless there will be a considerable flare-up of such advances during the first stage of post-war dealings; thereafter probably a slackened movement. No one can predict what proportions transactions of this kind will assume. In their absence, or in the event of their assuming no vast dimensions, the outcome of the sudden change from a debtor to a creditor position, through its combined influence on principal and interest, will be, to repeat, in the direction of increasing imports and rising prices.

The entire series of changes which thus result from the shift of the United States from a debtor to a creditor position are quite beyond the range of experience. In all past operations of the kind, such transitions have been spread over a period of many years, indeed over generations. With us the change has taken place abruptly. The corresponding change in our merchandise balance and in our general international balance has not yet been effected. The readjustment of international trade to the new conditions must still be awaited. And this readjustment, which is the real and substantial one, cannot take place with the same abruptness as the financial shift which is its impelling cause. Some years are likely to elapse before a new and fairly stable equilibrium of merchandise balances is reached. And during this period, it need hardly be said, new forces may enter or old ones may become stronger or

weaker. The ultimate outcome will be the result of many and interwoven factors.

One element in the situation has an influence peculiarly difficult of prediction. This is the underlying and dominant one of the demand for international commodities in the United States on the one hand, in foreign countries on the other. The foreign demand for our goods may become keener, our own demand for foreign goods less keen. Or precisely the opposite combination may appear: our demand for foreign goods may become keener and their demand for ours less keen. I suspect that during the pre-war period, and indeed throughout the period from 1873 to 1913, the foreign demand for our goods was not only great, but was tending to become greater year by year. It was this circumstance which seems to have made it comparatively easy for the United States to meet the heavy international debit charges of that period. During the war, further, the foreign demand for our goods was abnormal, almost insatiable. And so it has remained also during the period immediately succeeding the war. But what will be the situation when the world once again settles down? What is to be expected two or three years from now, what five or ten years from now? It is certain that nothing like the demand of the war period is to be expected under the conditions of peace. It would seem probable, in view of the industrial conditions to be foreseen for the next decade or two, that there will be relaxation as compared with the intensive demand of the pre-war period. European countries will go through a long and trying period of recuperation and economy. Their demand for American goods promises at most only to equal in intensity that of the pre-war period. On this score we can hardly expect a turn of events such as will offset the less unpredictable changes noted in the preceding paragraphs.

When changes in the international movement of goods and money are spoken of, and the accompanying changes in price levels, the tacit assumption of economic theory is always that of an unchanged general level in the world at large. The actual course of events during the pre-war period obviously had been out of accord with any such assumption. Reasoning based upon it was in need of modification before it could be applicable to the situation of the past, and needs to be no less modified to be of service in forecasting the future.

During the first years of the present century, prices were moving upward the world over. In such a time, currents of international trade which under stable conditions would have led to a fall in prices in a given country might serve simply to maintain the existing level in that country. The same currents would then lead to an intensified upward movement in other countries. Some such modification of the conditions assumed in ordinary theory seems to have been observable during 1900–13 in the relations between tropical countries on the one hand and the advanced countries of the temperate zone on the other. In the former the general level of prices was comparatively little changed. In the latter the advance was marked, continuous, and rapid.

The war itself now has brought a revolution in monetary conditions even more striking than that of the pre-war period. Not a country has escaped the throes of inflation. Not a country can escape the need of monetary readjustment. I see no reason to expect that the gold standard will be definitively abandoned. Much as has been said in favor of an international agreement for an entirely different monetary basis, nothing of the kind seems within the range of the practicable. The resumption of gold payments will be striven for everywhere. How soon and how completely it will take place on the

continent of Europe it is quite impossible to predict. But the expedients resorted to during the war are likely in any event to leave behind them as a residuum a much larger use of paper money than has been made in the past. The circulating medium of European countries will not again be permeated by gold to the extent that it was in former times in countries like Germany, France, and England. The net outcome of resumption and of movements in the direction of resumption is likely to be a range of prices below that of the war period itself, yet by no means as low as that of the pre-war period. A similar trend may be expected in the United States. A moderate process of deflation will set in — a wearisome adjustment to a somewhat lower monetary scale.

In a general situation of this kind the influence of the international factors may be concealed; yet it will not be obliterated. The changes in international trade and international payments apparently will be such as would lead by themselves in the United States to inflowing specie and rising prices. Modified as they must necessarily be by the monetary conditions at work through the entire world, their influence will rather be that of preventing the decline in prices from being *as great as it would otherwise be*. With resumption of specie payments in European countries and with a level of prices such as was reached in the United States during the war and maintained immediately after the war, we may expect an outflow of gold rather than an inflow. But that outflow will be *less* than it would have been had not the debit and credit items in our international transactions shifted so greatly. Prices may be expected to fall, and with them money incomes. They will not fall so much, however, as they would have fallen had the redistribution of the gold supply taken place under conditions similar to those of the pre-war period. We shall

not retain as much of that enormous accumulation of gold as we should have otherwise retained. But we shall keep a larger proportion than we should have kept under more normal conditions. We shall feel the influence of declining prices, but not as markedly as other countries will.

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RAILROAD VALUATION BY THE INTERSTATE COMMERCE COMMISSION

SUMMARY

Introduction: Progress of the Interstate Commerce Commission Valuations, 22. — I. The Commission's Reproduction Hypothesis, 25. — The reproduction program, 26. — Topographical conditions, 31. — Contingencies, 34. — II. Cost of Reproduction, 37. — Organization of the work, 39. — Basis of the inventory, 40. — Estimates and errors, 41. — Unit prices, 44. — Commission procedure, 47. — Expert testimony, 47. — "Overhead charges," 48. — Interest during construction, 52. — III. Depreciation, 54. — Second hand materials, 55. — Obsolescence or "functional depreciation," 55. — Observation and estimate, 57. — Deferred maintenance as depreciation, 60. — Capacity for service, 62. — Maintenance as investment, 64. — IV. Land, 67. — Present value of land, 68. — Commission procedure, 69. — Texas Midland controversy, 70. — Land valuation and condemnation practice, 75. — Hypothetical cost of reacquiring land, 78. — Minnesota Rate cases on land valuation, 79. — "Railway value," 81. — Value and cost, 83. — The unearned increment, earnings and value, 85.

THE skeptic who characterized the Railroad Valuation Amendment to the Interstate Commerce Act as legislation which directed an attempt to achieve the impossible, has, *prima facie*, been discomfited. Tentative valuations have been served on forty-five carriers; extensive hearings have been held; and, for the Texas Midland, the Winston-Salem Southbound and the Kansas City Southern roads, formal findings and orders as to "basic facts" have been published.[1] The Inter-

[1] Texas Midland Railroad, 1 Valuation Reports of the Interstate Commerce Commission (Val. Rep.), 1; Winston-Salem Southbound Railway, 1 Val. Rep. 187; Kansas City Southern Railway, 1 Val. Rep. 223. In the Kansas City Southern case, Commissioners Aitchison and Eastman did not participate, and Commissioners Daniels and Hall dissented, indicating substantial differences of opinion. Pp. 266–274. The Texas Midland opinion describes the methods and theories of the Commission *in extenso*, and parallel issues appearing in the Winston-Salem Southbound and Kansas City Southern cases are decided by reference to the stand taken in the preliminary and test case. Ex-

state Commerce Commission promises "substantial accomplishment" of the engineering field work by January 1, 1920, and a completion of the necessary engineering office work shortly after the end of that year. It is thought also that the accounting investigation can be expedited, since the Commission will experience less difficulty in competing for the services of qualified accountants. And, with the carriers better able to furnish the necessary land data, it is hoped also to complete that phase of the work before the end of 1920.[1]

But in none of the tentative valuations has a single sum been set as the "value" of the carrier's property. Indeed, the tentative valuations do not, strictly speaking, contain figures of "value" at all. There is a summary of "cost of reproduction new" and of "cost of reproduction less depreciation" of the railroad plant (excluding land); of the "present value" of land; and of original cost, where data were found. But there is no figure purporting to represent the "value" of the railroad. Such a figure the Commission now promises ultimately to fix, tho recognizing that the Act might be interpreted to eliminate that responsibility.[2]

cept the tentative valuations of the Kansas City Southern, the Atlanta, Birmingham and Atlantic, the Los Angeles and Salt Lake, and the Norfolk Southern, the reports thus far published have had to do only with relatively unimportant "short lines." At the Washington hearings of January-February, 1917, Mr. Thomas W. Hulme, Vice Chairman of the Railroad Presidents' Conference Committee, protested that neither the Texas Midland nor the A., B. & A. could "properly be taken as a typical or representative case." He asked, therefore, "That final decision in these cases be not made until there shall have been hearings in other cases which are fairly representative of the railroads of the country." Hearings, p. 17. Mr. Hulme did not specify what carriers might be accepted as representative; nor did he state a test by which to determine a representative carrier. Mr. Pierce Butler spoke in similar terms: "We thought . . . that it was not a good railroad to take as a test or typical case." P. 56. The publication of the Commission's opinion represents the overruling of these contentions.

[1] Thirty-second Annual Report, I. C. C., p. 56.

[2] Texas Midland, 1 Val. Rep. 1, 6; Winston-Salem Southbound, 1 Val. Rep. 187, 189; Kansas City Southern, 1 Val. Rep. 223, 229.

The decision ultimately to make a finding of "value" upheld the contention of the attorneys for the carriers, see Texas Midland Brief of Pierce Butler and Leslie Craven,

The Texas Midland opinion contains the assurance, however, that all of the "basic facts" upon which a judgment is to be formed are before the Commission, and that the issues as to these are "wholly independent" of what should be deduced from them. There now remains "but the one step of deducing from the facts stated the sum to be found." And, in the meantime, the "basic facts" shown in the tentative valuations (with minor corrections) are made "final."[1] In the Winston-Salem Southbound case, the Commission cites its previous opinion and makes findings of "underlying facts," upon which it promises ultimately to state "a

August 1, 1917 (hereafter cited as Texas Midland Brief), p. 31 and following; but compare Atlanta, Birmingham and Atlantic Brief of W. G. Brantley, December 1, 1917, (the A., B. & A. Brief), p. 11 and following, for a compromise point of view; the Kansas City Southern Brief of Samuel Untermeyer, S. W. Moore, and J. M. Souby (the Kansas City Southern Brief), p. 3 and following (Reply Brief), p. 5; and overruled the contention of Mr. Farrell, the Bureau of Valuation's solicitor (Brief in the Texas Midland Case, p. 1 and following), and of Commissioner Aitchison, formerly solicitor for the Nat'l Ass'n Ry. Com'rs, Brief, pp. 10–15 and following.

The issue was simply one of interpretation of the act, and the basis of the difference of interpretation can be explained only in terms of the act. The railroads based their claim for the finding of such a sum on the words contained in the title of the act, "providing for a valuation of the several classes of property," and upon the presence of the word "whole" in the seventh paragraph as indicated below. The argument of Mr. Farrell (and in substance his argument follows that previously advanced by the California Railroad Commission, Brief on Fundamental Principles, pp. 11–13, and Mr. Max Thelen, of that body, Hearings, January, 1916, pp. 7–23) looked also to the language of the act. The first paragraph provides "that the Commission shall, as hereinafter provided, investigate, ascertain and report the value of all the property owned or used by every common carrier. . . ." The significant words are here held to be the qualifying phrase, "as hereinafter provided," since the following paragraph requires the Commission to ascertain and report the three "cost values": cost of reproduction new, cost of production less depreciation, and original cost to date. A separate paragraph, devoted to land, directed a report of "the original cost of all lands . . . and the present value . . . and separately the original and present cost of condemnation . . . in excess of such original cost or present value." The seventh paragraph then reads, "such investigation shall show the value of the property of every common carrier as a whole and separately the value of its property in each of the several states, . . . classified and in detail as herein required." The carriers contended that the final clause, "classified and in detail as herein required," etc., did not modify the phrase, "as a whole"; Mr. Farrell and Mr. Aitchison insisted that the phrase did so serve as a modifier, and that, taken in connection with the same words in the first paragraph, and the classification of "cost values," etc., the requirement of the act was met, when such figures were reported.

[1] 1 Val. Rep. 1, 6. But in his dissent to the Kansas City Southern opinion, Commissioner Hall says: "With much in this report I am in accord, but, even with the reservations which it contains as to further finding of 'single value,' I am not persuaded that it reports all the facts of substance which we are required by the valuation act to report or amounts to a substantial compliance therewith." 1 Val. Rep. 223, 266.

single sum as the value of the common carrier property . . . for purposes under the act to regulate commerce." [1]

And what are these "basic underlying facts?" As made final by the Commission, they include, in addition to the "cost values" (cost of reproduction new, and less depreciation, and original cost to date) and the "present value" of land, a statement of the corporate and financial history, a rewritten income account and balance sheet, and a description, in general terms, of traffic possibilities and operating conditions.[2] Surely this is a sufficient array of "facts" to satisfy the requirement of the rule Smyth *v.* Ames — even to the "saving" clause: "we do not say that there may not be other matters to be regarded in estimating the value of the property." [3]

I. The Commission's Reproduction Hypothesis

The tentative valuations contain figures of cost of reproduction.[4] The totals of the first half dozen follow:

Railroad	Reproduction new except land	Less depreciation except land
Texas Midland	3,360,053	2,509,209
Winston-Salem S. B.	5,121,188	4,753,006
A., B. & A.	24,154,998	19,408,810
K. C. Southern	46,274,363	38,258,909
N. O., T. & M.	8,865,636	7,572,886
E., J. & E.	13,742,023	11,057,598

[1] 1 Val. Rep. 187, 188. See also Kansas City Southern, 1 Val. Rep. 223, 229.

[2] See the Commission's formal orders, Texas Midland, 1 Val. Rep. 1, 73, 80; Winston-Salem Southbound, 1 Val. Rep. 187, 202; Kansas City Southern, 1 Val. Rep. 223, 275. The Engineering, Land and Accounting Reports are by reference made part of these orders. Texas Midland, p. 79; Winston-Salem Southbound, p. 206; Kansas City Southern, p. 321. The Railway Age Gazette was gratified "that the bill passed by Congress seems to provide fully for a valuation that shall include all important factors." Vol. 54, p. 421.

[3] 169 U. S. 466, 546. See the writer's Railroad Valuation (hereafter cited as Railroad Valuation), pp. 15-23. The purpose of the present study is to bring to date the discussion of that volume. Where, therefore, the present argument can be abridged, reference to the discussion contained therein is given in the footnotes, the aim being to avoid duplication.

[4] The following is an interesting paragraph from Mr. Brantley:

"The consuming love of accuracy which seemingly now controls the view of those opposing the cost of reproduction method for determining the value of carrier lands . . .

An understanding of the governing hypothesis and of the methods of arriving at these figures is essential before a judgment as to their possible usefulness in the determination of " value " can be expressed.

Assuming the " mental obliteration " of the existing railroad (abandoned sections are not inventoried),[1] what will be the cost of its " hypothetical reproduction " [2] — " under present conditions, by present methods, and at present prices ? " [3] The non-existence of the railroad is assumed, while all other conditions are taken as existent on valuation date.[4] Only the railroad disappears. There shall then be a " rational conception of the process of reproduction." [5]

is more than strange . . . because it overlooks the fact that there is scarcely a figure or statement in the tentative valuation of protestant's properties which is not a mere estimate, or in other words, the opinion of somebody." A., B. & A. Brief, p. 622.

It may be said, however, that the Commission has recognized that cost of reproduction is " at best an estimate." Texas Midland, 1 Val. Rep. 1, 16.

[1] Texas Midland, 1 Val. Rep. 1, 54, 115; Kansas City Southern, ibid., pp. 223, 243.

[2] Prouty, Memorandum, Texas Midland Railroad, p. 9.

[3] Ibid., p. 6.

[4] " This method of estimating cost of reproduction new is attacked by the Minnesota Railroad and Warehouse Commission as being within the prohibition announced . . . in the Minnesota Rate Cases. It is contended that this decision condemned any cost of reproduction new ascertained by an assumption of the nonexistence of the railroad under valuation while at the same time assuming the existence of cities, industries, and other developments alongside the railroad. . . .

The Minnesota commission further contends that we have construed the words " cost of reproduction new " too literally; that " cost of reproduction new " is in reality a misnomer, and that what should be reported is inventory value at valuation date. In other words, we should ascertain the cost of the railroad property as it stands on valuation date without taking into consideration any expense which would be incurred by reason of the fact that it would have to be built. By applying this method to the instant case, it is asserted that the figure reported by us is too high by at least $630,151, or approximately 23 per cent. . . . We cannot accept the view." Texas Midland, 1 Val. Rep. 1, 11, 12.

See the arguments of Messrs. Flannery and Elmquist; the former, Hearings, December, 1917, pp. 76, 77, the latter, Hearings, January, 1917, p. 51. Asked by Commissioner Hall if there was not an element of fiction in assuming construction to take place over night, Mr. Elmquist said: " There is not going to be any reconstruction." Ibid., p. 305.

[5] Texas Midland, 1 Val. Rep. 1, 54. Mr. Aitchison, Brief for the Nat'l Ass'n Ry. Com'rs, had called this " rational " process, " the exercise of imagination in the realms of the transcendental." P. 82.

Such reproduction necessarily involves the securing of a charter [1] and the raising of the needed funds. For simplicity it is assumed that the credit of all railroads will be equally good.[2] Engineering parties must be organized and placed in the field; but their task is a much simpler one than that faced by the original surveyors. For, through the country side, and in the heart of the great city, there is a long stretch of vacant land, corresponding to the exact site now occupied by the railroad.[3] Alongside, great industrial plants (dependent for their very life upon the presence of the railroad) continue to operate, receiving and delivering freight. But these plants do not encroach upon the right of way. If so, it would be less easy for the engineer, who — instead of running preliminary surveys, indulging in "supposititious groping around the country" [4] — is to walk to the exact spot where the road now exists, and to stumble at once on the best route. It would seem hardly necessary for him to do more than verify the center line.[5] His task is next to prepare what he conceives to

[1] Texas Midland, 1 Val. Rep. 1, 30.

[2] Ibid., p. 31. See Prouty, Memorandum, Texas Midland Railroad, p. 42, and especially Notes and Comments thereon by Messrs. Butler and Craven, p. 158, where it is indicated that such assumption is a departure from a strict "reproduction" hypothesis. The credit of all railroads is not by any means the same; nor would it be in the event of reproduction, unless the assumption be made that all other things are equal. These are hereafter cited as Prouty, Memorandum, and Notes and Comments.

[3] This holds true even tho, when the original line was constructed, buildings were wrecked. See Hearings, January, 1917, pp. 40–46; also A., B. & A. Brief, pp. 97, 98.

[4] Mr. Aitchison, Brief for Nat'l Ass'n Ry. Com'rs, p. 101.

[5] "The tentative valuation includes a sum of $9,200 for 'location engineering for a period of four months, at an average expense per month of $2,300.' The propriety of this inclusion is questioned by the valuation committee of the National Association of Railway and Utilities Commissioners, for the reason that it represents reconnaissance, an obvious conjectural expense incurred in supposititious groping through the country for locations which are not used. Such an expense, it is argued, should not be included in the reproduction cost of a railroad, the exact location of which is known. In the construction of a new railroad it is necessary to reconnoiter, lay out lines, and engage in considerable preliminary work in order to secure the most advantageous route. Such a program is not necessary in a theoretical reproduction of a property under valuation. The inclusion of an amount to cover expenses of this character is incorrect. Cost of reproduction new is the cost of reproducing the existing line of railroad." Texas Midland, 1 Val. Rep. 1, 28.

be "the most practicable and economical program for the construction of the road." [1]

In fixing upon this program, the engineer is not governed by the history of the road: [2] — he is to assume that he is entering upon an entirely new venture, but one where the uncertainties faced in original construction need not be faced.[3] Tho actual construction began at the east end, he may begin at the west; [4] tho the original construction required four years, he may finish in three.[5] His problem is further simplified by the fact that he has at his command all existing means of transportation (except the road under reproduction), whether or not the competing and connecting lines were in existence when the road was built. The accident of ownership is therefore important. Had the Texas Midland been absorbed, say by the St. Louis Southwestern,[6] the latter road would not, as now, be available to haul men and materials. Conceivably a different construction program, and a different cost of reproduction would

[1] Texas Midland, 1 Val. Rep. 1, 11. In its Kansas City Southern opinion the Commission said on this point: "An economical production of the property of the carrier would render unnecessary the excavation of this material in the same manner as it was excavated in original construction and for this reason it has no place in cost of reproduction new." 1 Val. Rep. 223, 244.

[2] An illustration appears in the Texas Midland opinion:

"It often happens that the track was at first supported upon a timber trestle which later was filled. The existing structure is an embankment, which contains upon the inside the original trestle. In the inventorying of the property this is measured, computed, and priced as though it was simply an embankment, no reference whatever being made to the trestle. In applying the price the engineer inquires whether approved construction would require the erection of a temporary trestle from which the embankment would be built, or whether the embankment should be constructed without the expense of such trestle, or so much of it as has not decayed. If good construction would require a temporary trestle, then proper allowance is made for the same; otherwise the price is determined as though no trestle had ever existed." P. 117.

[3] Texas Midland, 1 Val. Rep. 1, 25, 143.

[4] Comments on the Reproduction Cost New of the A., B. & A., E. M. Durham, Special Engineer, p. 20.

[5] Protest, N. O., T. & M., pp. 18–21; W.-S. S., pp. 11, 12; A., B. & A. pp. 13, 25, etc.

[6] Or had the Winston-Salem Southbound been built as a system line by either the Norfolk & Western, or the Atlantic Coast Line (the joint owners).

result.[1] Likewise if the Pacific coast extension of the St. Paul had not been built, a different construction program for the Northern Pacific would be necessary, from the program now available. That line, extended as a pioneer, carried materials over its completed portion to the end of track. Now that the St. Paul is built, it can receive men and materials at many points along the line. And prosecution of the work simultaneously in many sections very much reduces the total construction period.[2]

[1] See the discussion of the imaginary "material yards." Hearings, December, 1917, pp. 79–85; Texas Midland Reply Brief, p. 321. The Commission's engineering program for the A., B. & A. is shown in Hearings, December, 1917, pp. 83, 84; for the Texas Midland, March, 1917, pp. 904–922.

[2] 1 Val. Rep. 32, 139, 157. See Prouty, Memorandum, p. 44. The railroad representatives have not objected to the application of the hypothesis in these terms. Hearings, May, 1915, pp. 32, 39; Carrier Valuation Brief of 1915, pp. 35–47, 61, 62.

Mr. Worley described the process of fixing upon a construction period for the Kansas City Southern in the following language:

"The construction period on the Kansas City Southern was determined after careful study of all the facilities, the conditions of all the lines, other railways, the time that it had taken to construct the individual sections, and many other matters. We reached the determination by exactly the same processes that we used in reaching all these conclusions. I believe that this is as far as I can answer. We fixed three years approximately. . . . We made a careful study of all the railroads along the Kansas City Southern, the facilities for getting in equipment and material, and all other related matters, made a study of the actual time consumed in constructing the various sections, and it seemed to us that the various sections could be constructed in a less period; that a three-year period was a fair period, and that is about the general study that was given that matter. . . . We divided the road up into districts, you might say, in that we took each intersecting point where a foreign railroad touched the Kansas City Southern, and we ascertained the distance between that and the next railroad point, and we ascertained the average distance that it would have to go from each point for the center of grading activity. We assumed that construction work could be carried on from each of those points. We made our assumption on the basis that the facilities were there and work could be carried on from each of those points. We did not assume that a certain number of teams or a certain number of men were to be unloaded at that particular point on a particular day. We considered the facilities for doing the work, but not the chronological order in which each mile would be done. We did not make a computation as to where each piece of work would begin. We did not make an analysis of where the work would begin at this town, or this block, or this road. We considered that the facilities were there and left the matter whether a particular contractor would begin at any particular station or not to his own discretion, if he wanted to consider it from that viewpoint.

"I made a study of the time actually consumed in the original construction of the various sections of the road, and also for the construction of the whole road.

"We had this information and it was studied from many angles. We ascertained the construction period of many other pieces of property and, as I recall, I think at one time early in the work we built up an entirely synthetical program, endeavoring to, and I do

The materials for reproduction come from the most available *present* source,[1] altho Mr. Prouty indicated that if there was not enough sand in the pits of the Texas Midland properly to ballast the road, it would be assumed, "for reproduction purposes," to have been put back.[2] Ordinarily the reproduction is in kind, altho, for the A., B. & A., open hearth steel has been "substituted" for the Bessemer rail laid before the carrier had a Birmingham terminal,[3] and for the Texas Midland, treated pine timbers have been "substituted" for the unavailable bois d'arc.[4] But relay rails are reproduced not "new," but as "relay";[5] locomotives bought second hand are reproduced as "new" second

not know how much weight that really had, but we tried to approach it from almost every angle, and our final conclusion was, as has been stated in the record, and we had this information as to the actual construction periods of these sections of the road of the Kansas City Southern as it was originally constructed and I think we gave some weight to that." Quoted, Reply Brief of Messrs. Farrell and Benton, p. 60.

For Mr. Jones' basis fixing upon the construction period of the A., B. & A., see A., B. & A. Brief, p. 286 and following.

[1] "It may have been thought necessary in the original construction of the road to bring material for a considerable distance in order to secure a proper foundation for the track. Since the construction of the property sources of supply have been developed from which material of substantially the same kind, although not identical, might be obtained at a much less expense. In such case the engineering inventory would enumerate material of the general kind which is found in the track, but the price would contemplate the obtaining of that material from the less expensive source of supply and not from the original source." Texas Midland, 1 Val. Rep. 1, 117.

[2] A., B. & A. Brief, p. 626. Mr. Malthie, speaking for the Nat'l Ass'n of Ry. Com'rs, Hearings, May, 1915, p. 98, proposed the use of the original sources of supply for gravel, ties and rails. Mr. Farrell even suggested the use of the material now in the railroad. "What," he asked, "is going to become of the material that is there now?" (A., B. & A. Brief, p. 48) — what, indeed?

[3] Durham, Comments on the . . . A., B. & A. "The Bessemer rail in use on the A., B. & A. was found to be more expensive, freight rates considered, than the open-hearth now to be had at Ensley," p. 24.

[4] 1 Val. Rep. 1, 41. It was contended by Mr. Helm of Kansas that "since bois d'arc is indestructible and these piles are now in existence in bridges, they would be available for reproduction if the road were blotted out." Texas Midland Brief, p. 576.

[5] 1 Val. Rep. 1, 43. At p. 35 the Commission had said:

"The property to be reproduced is the existing property as it was when it was put into its present service. When the records of the carrier clearly show that second hand materials were used the cost of reproduction new will be estimated for the same kind of materials in the same condition as when installed."

See Kansas City Southern Brief, pp. 127–134, for extended exposition of carrier contention, which was overruled, Kansas City Southern, 1 Val. Rep. 223, 238.

hand locomotives.[1] And a locomotive crane, bought second hand by the Texas Midland, is "reproduced" for actual cost plus the freight from Cleveland, Ohio, where the crane was manufactured, altho it had been purchased at a nearer point and the actual freight had been "less than that allowed."[2]

So also the *present*, and not the original, topographical conditions govern the reproduction. "If original conditions were to govern, data concerning the work done many years ago could not be obtained in many instances. . . . The amount reported . . . would be the result of speculation."[3] Therefore, the water-course which presented a problem at the time of original construction, but which (perhaps because of the change in drainage resulting from the building of the railroad) has since disappeared, presents no present difficulties. If a swamp has been drained, the present construction is through non-swampy land. And if the carrier itself, in order to avoid a double crossing of a stream at a bend, has dug a cutoff, that work is not a part of reproduction new.[4] Nor is riprap protection against streams,[5] or a public improvement located off the right of way, since neither "would not be interfered with by a removal of the railroad."[6] If the public improvement were wiped

[1] Texas Midland, 1 Val. Rep. 1, 86; see Protest, A., B. & A., p. 136.

[2] Prouty, Memorandum, p. 82; see Texas Midland Brief, p. 646; and Texas Midland, 1 Val. Rep. 1, 46. The discussion represents an extreme example of the mixture of "cost" and "reproduction" concepts. Mr. Prouty insisted that "to apply other than a second hand price would unduly inflate the cost of reproduction new." Typewritten Record, p. 508. The crane had, as a matter of fact, been in use for less than a week at the time of the purchase by the railroad. Ibid., pp. 788, 801.

[3] Texas Midland, 1 Val. Rep. 1, 16.

[4] Ibid., pp. 115, 118.

[5] Kansas City Southern Brief, pp. 175–178. See Hearings, May, 1915, pp. 33, 39. But in the Kansas City Southern case, 1 Val. Rep. 223, 245, the Commission allowed riprap when "a necessary part of the property."

[6] Farrell, Texas Midland Brief, p. 29; see Hearings, March, 1917, p. 57 and following. The tone of the discussion is indicated by the following excerpt:

out by the removal of the track, its cost of reproduction would be included.[1]

One relatively unimportant item, clearing and grubbing, has given rise to considerable discussion, discussion quite out of proportion, indeed, to the financial interests at stake.[2] The eastern section of the Atlanta, Birmingham and Atlantic was originally built through a pine forest, where the presence of the railroad made possible the lumbering operations which resulted in clearing the land now used for agriculture.[3] Shall the right of way be considered as covered with the original forest, or shall it be taken as tillage land, similar to that adjacent? Applying the doctrine of "theoretical reproduction," the Commission has held that — in a case such as that cited for the A., B. & A. — "the amount of clearing and grubbling which would be performed today . . . would be considerably less than that which was done in connection with original construction."[4] The rule of the Commission, approved as "involving the minimum of conjecture," is therefore to consider the right of way as in the same condition as adjacent land. If there are no trees on either side of the right of way, the latter is treated as similarly devoid of trees; if a forest adjoins, even tho, at the time of construction, the land was clear, a corresponding growth is assumed to be on

Mr. Farrell: "Now if the railroad were wiped out of existence would those public improvements be wiped out of existence also?"

Mr. Durham: "Why I cannot answer that question."

Mr. Farrell: "Well just what seems to trouble you about answering that question?"

Mr. Durham: "As to what would happen if the railroad were wiped out of existence. I don't know."

[1] Texas Midland, 1 Val. Rep. 1, 19; but see Kansas City Southern, 1 Val. Rep. 223, 239, 240.

[2] Texas Midland, 1 Val. Rep. 1, 14–16; Hearings, May, 1915, pp. 36, 37; January, 1917, pp. 31–44; Texas Midland Brief, pp. 556–559; Prouty, Memorandum, pp. 68, 69; and Notes and Comments, pp. 13–23.

[3] A., B. & A. Brief, pp. 96–100.

[4] Texas Midland, 1 Val. Rep. 1, 14.

the right of way.[1] The rule is made to work both ways — with the balance against the railroad.

A seemingly obvious inconsistency emphasizes the artificiality of the reproduction hypothesis, which, it will be remembered, assumes that only the "obliterated" railroad is rendered non-existent. Both the Atlanta, Birmingham and Atlantic and the Winston-Salem Southbound are recent constructions. When crossing the tracks of an older road, the junior line usually bears the expense of providing the necessary bridge or interlocking plant. But on the theory that the Atlanta and West Point owns the bridge built by the A., B. & A., the cost of reproducing the bridge is omitted from the A., B. & A. figures.[2] The Atlanta and West

[1] Texas Midland, 1 Val. Rep. 1, 16, quoted and followed, Kansas City Southern, 1 Val. Rep. 223, 245. The theory of the Commission is justified in the following words by Mr. Farrell:

"We have to proceed in a practical manner in estimating the cost of reproduction. If we cannot get in practically all cases the conditions which did exist when the railroad was constructed it would be absolutely wrong, according to my view, to estimate the cost of reproduction new so far as clearing and grubbing is concerned, upon conditions which existed when the railroad was constructed in any case, for this reason — we could not have uniformity. . . .

"We have to be practical, . . . we have to take present conditions which we can see, . . . we cannot uniformly apply the estimate of the cost of reproducing clearing and grubbing unless we do it upon present day conditions." Hearings, January, 1917, p. 39.

See also the further discussion, p. 40 and following. The attitude of the carriers is expressed by Mr. Brantley (p. 41):

"There is but one way to keep the record straight to get away from uncertainties and speculations, and that is to take the record of how much work of this kind was done in the original construction. . . . It is equally a speculation to assume the non-existence of the railroad and yet that the adjacent land is cleared land."

[2] A., B. & A. Brief, pp. 76, 239–245.

The following from the Commission's opinion in the Winston-Salem Southbound case, 1 Val. Rep. 187, 193, states a parallel situation:

"In constructing the carrier's railroad, it became necessary for it to cross under the Southern Railway at Lexington, and under the Seaboard Air Line Railway at Wadesboro, and also to install grade crossings with the Southern Railway at Winston-Salem and at Albemarle. As the Southbound Company was the junior carrier, the expense of these crossings was wholly borne by it. In the tentative valuation all costs borne by the Southbound Company have been included in the statement of original cost to date. . . .

"The carrier contends that if it be assumed for purposes of determining the cost of reproduction that other railroads exist as of valuation date, then as a matter of theory it must be assumed that the identical structures which the Southbound Company as the junior carrier was obliged to construct would likewise have to be constructed in reproduction.

"The method followed in the tentative valuation does in fact contemplate the assumed existence of the railroads as crossed, and gives full credit in the cost of repro-

Point is supposed to have built a bridge where sixty years later a line from Brunswick to then undeveloped coal and ore lands will cross! Small wonder that the necessity for preliminary surveys is eliminated. And yet this device commended itself to the Commission as "involving the minimum of conjecture, and as the only plan which in all its aspects is feasible and certain in practical application." [1]

Hypothesis has also eliminated the contingencies allowance, as such, in the cost of reproduction. The claim for a contingencies allowance, in terms of a percentage of the cost of reproduction,[2] is based largely upon the analogy between the task of estimating cost before construction and that of estimating cost of "theoretical" reproduction:

When the construction of a railroad is under consideration it is customary for an engineer to estimate the amount of money it will be necessary to expend in building the property. Experience has shown that it is practically impossible, no matter how carefully such an estimate may have been made, to include all the items of expense which will be incurred in the work of construction. Additional expense is caused by omissions and unforeseen difficulties in the work of construction. Necessary materials are sometimes omitted. From soundings a cut may appear to be made up entirely of earth and the

duction estimates for whatever is shown to be owned by a carrier, or occupied and used by it, while showing, as a historical fact for whatever it may be worth, the expenditures in fact made by the carrier in original construction. The method commends itself as involving the minimum of conjecture, and as the only plan which in all its aspects is feasible and certain in practical application."

[1] Winston-Salem Southbound, 1 Val. Rep. 187, 194. But a telegraph line, built by the Texas Midland, and owned by the Western Union Telegraph Company, was included in the cost of reproduction of the Texas Midland. 1 Val. Rep. 1, 45. See Protest, A., B. & A., p. 13; Winston-Salem Southbound, p. 12, and Hearings, January, 1917, p. 136 and following. Mr. Farrell there (p. 144) concluded: "Any change from the present program might render it impossible for the engineers of the Commission to do with the degree of accuracy which the Supreme Court has said it is necessary for us to do our work, the thing under a different plan they would be required to do. Under the present plan they can give us all the facts, an estimate with some degree of accuracy, of what it would cost to reproduce the thing that is there today. But if you change the plan I am fearful that the result will be that they will not be able to give us information which will be at all reliable."

[2] See Railroad Valuation, pp. 47–50, and briefs and cases there cited; also Hearings, May, 1915, where Mr. Holbrook, of the Southern Pacific defined contingencies as "unforeseen, uninvestigated or indeterminate items of construction expense." P. 45.

estimate for excavating and digging is based upon this expectation. However, when the work is performed it is found that it contains a large boulder which it is necessary to cut through or entirely remove. This unforeseen condition lengthens the time allowed for construction and correspondingly increases the expense. Frequently quicksand is found where solid earth was expected. Numerous other instances of unforeseen difficulties could be cited which occur and which add to the total cost of the work. In order to provide for expenses of this kind the practice of including a certain sum for contingencies in estimates of the prospective cost of construction has been quite generally adopted.[1]

The railroads have contended that, in reproduction, omissions would develop in the inventory, and further that unforeseen difficulties, such as occurred in construction, should be hypothetically anticipated, and that, therefore, to secure a figure fairly representative of reproduction cost, an estimate to take account of contingencies should be made.[2] The possibilities of "hidden quantities," and the nature of the "unforeseen difficulties" were explained at length.[3] Even Director Prouty, who has developed a much more critical attitude toward carrier reproduction estimates than that shown in his handling of the Spokane case,[4] acknowledged that in measuring quantities, "there are many cases where they must be guessed at." [5] And in esti-

[1] Texas Midland, 1 Val. Rep. 1, 25.

The claim of the carrier that the inclusion of the "contingencies" allowance was "the settled practice" (Texas Midland Reply Brief, p. 166) was disposed of by the Commission in the following words:

"The chief insistence of the carriers in favor of this inclusion is that inasmuch as it has been commonly allowed in the past it should be made here. But this would by no means follow. Such an addition might perhaps be made in case of a superficial inventory, where omissions and oversights would be expected, but not in one made with greater care. Much would depend upon the method by which prices were determined. Nor can it be said that the methods and practices involved in the valuation of railroad properties in the past have yet reached that state of permanence which entitles them to the rank of authority." Texas Midland, 1 Val. Rep. 1, 146.

[2] Texas Midland Brief, pp. 693–699.

[3] Hearings, March, 1917, pp. 168–289, the testimony of the carrier experts.

[4] See for example his discussion, Hearings, March, 1917, pp. 282, 283 and compare the facts in the Spokane case, as developed in Railroad Valuation, p. 54. Railroad witnesses in the 1917 Hearing had cited an instance of a "peripatetic orchard" and of a mountain which "got up and advanced down into the cut."

[5] Ibid., p. 281. Compare Texas Midland, 1 Val. Rep. 1, 144.

mating quantities the representatives of the Commission have been instructed to rely largely upon the carriers statements, supplemented by records, and tested by observation. The statements and records are accepted unless they appear "erroneous on their face." [1] But the Commission did not agree that any formal allowance should be made:

The road has been constructed. Every item which enters into the property is present and can be inventoried. Those things which are omitted in the estimate of original construction are all here in case of the completed property.[2]

The Commission continued:

What is true of omissions in the estimate of original cost is equally true of those unforeseen happenings and conditions which in preliminary estimates must be taken care of by an allowance for contingencies. The engineer in the making of his original estimate may overlook many of the difficulties to be encountered; the engineer in estimating cost of reproduction has before him every one of those difficulties. If the sounding rod struck what appeared to be solid rock but was in fact a boulder, and if for that reason the pier must be sunk twenty feet deeper, this is known to-day.[3]

[1] Texas Midland, 1 Val. Rep. 1, 26. The attorneys for the carrier declared that Mr. Prouty was inconsistent: "He refuses to take clearing and grubbing from existing records, and on the other hand, excludes contingencies unless . . . derived from records. . . ." Notes and Comments, p. 127.

[2] Texas Midland, 1 Val. Rep. 1, 143. It would not seem, however, that the example of the equipment (composed of large single units) is a fair one by which to establish the completeness of the entire inventory:

"It may be said, altho that claim has not been very clearly urged by the carriers, that it is impossible to enumerate all the items of property which enter into the construction of a railroad, and that some sum must be included to take care of inevitable omissions. While this might be so in case of an inventory hastily taken, it is not true of the inventories made by the Commission pursuant to the valuation act. To an extent the Commission's inventory is made in the first instance by the carrier and checked by the Commission. This is true of equipment. The carrier furnishes a list of its rolling stock of all kinds, and that list is verified by the representatives of the Commission. It is significant as bearing upon the accuracy of the work that up to the present time in no case has there been any dispute between the carriers and the Commission as to the units of equipment which the carrier owns. Further investigation by the Commission's engineers has shown that many such units which appeared upon the records of the carrier as in existence were no longer in service, and in some instances equipment has been identified which did not appear upon the records of the carrier; but in the end there has been a complete agreement between the carrier, the engineer, and the accountant, all approaching this subject from different points of view." Ibid.

For the carrier's stand, see Notes and Comments, pp. 127–129; and Carrier Valuation Brief of 1915, p. 105 and following.

[3] Ibid., p. 144. The discussion is continued:

The " weather " contingency, the reality of which was recognized by Mr. Prouty who cited the repeated washouts of a portion of the Salt Lake route [1] has been compensated for by allowance in the unit prices established.[2] " No contractor would name a price which did not include all the elements of chance named above " — accidents, floods, washouts, strikes. " There would be no propriety in allowing a second time for contingencies of that class which have been once compensated for in the price applied." [3] The question, says the Commission, is not what has been done in the past, but rather what ought to be done now. Preferring to give weight to the element of doubt at the specific point where doubt occurs, no allowance, as such, is made for contingencies.[4]

II. Cost of Reproduction

The methods used to secure the figures presented in accordance with the foregoing hypothesis are described

" An instance was brought to attention where in the addition of a second track quicksand developed which required a large amount of expensive excavation, the replacing of solid earth where the quicksand had been, and the construction of an expensive mattress to be used in that connection. It was said that this was a contingency. So it was in the original construction of the property; but to-day the thing done is there and the cost of doing it will all be estimated in reproduction. No second allowance should be made by way of contingencies." P. 145.

[1] Hearings, December, 1917, pp. 146, 147. See Hearings, March, 1917, p. 184 for the oozing of mud into a tunnel, " doubling cost," the result of a storm; and p. 259, for a mountain slide.

[2] Texas Midland, 1 Val. Rep. 1, 145–147.

[3] Ibid., p. 147.

[4] Texas Midland, 1 Val. Rep. 1, 147. At p. 26 it is said:

" The statement that no provision for contingencies has been made by us in this proceeding is therefore incorrect. The figure reported as cost of reproduction new is an estimate of the amount of money necessary to reproduce the identical property under valuation. The inventory is made with great care and the prices applied are arrived at after exhaustive study. Every necessary expense is taken into consideration.

" Since reproduction new is at best an estimate, it is apparent that an estimate arrived at upon a basis as outlined above is as liable to be too high as too low and that therefore there is no warrant for the addition of a definite amount to cover contingencies, but that any allowance of that kind which ought to be made should be and is taken care of in connection with particular items of property."

See also testimony of Mr. Worley, Hearings, March, 1917, p. 916.

at length in the Texas Midland case.[1] The aim has been to do a "common sense job," and everything asked of the carriers has been asked "for the purpose of getting a ninety-nine per cent inventory, rather than an eighty per cent inventory."[2] The Commission has sought to command the confidence of all parties. It has therefore rejected the original proposal that carrier schedules be checked by the Commission's engineers,[3] tho this had been the typical procedure in the so-called state valuations.[4] Instead the Commission has made the inventory, calling upon the carriers for needed information and assistance, and requesting the active participation of carrier employees, this decision being justified on the basis of authority and of economy.[5] But the result has none the less been to pile estimate on average.

[1] 1 Val. Rep. 1, 7, 108–182 (Appendix 3). By reference, Appendix 3 may be made a part of subsequent tentative valuations (p. 7). The appendix is obviously based on Prouty, Memorandum.

The following is a brief, but adequate, description of the organisation of the Valuation Work. Under Mr. Charles Prouty, formerly a member of the Commission and now Director of the Bureau (formerly the Division) of Valuation, the country is divided into five districts, each containing approximately 50,000 miles of line. At the headquarters of each district is a member of the Commission's Engineering Board, with a District Engineer, a District Accountant, and a Valuation Attorney who acts as supervisor of the land appraisals, and as legal adviser for the district. Each of these section heads works independently of the others; he is responsible only to Washington. When his work on a carrier is completed, the result is forwarded to the Valuation Bureau Headquarters, where the Valuation Analysts and assistants, bring the reports of the three sections into the form of the tentative valuations served on the carriers. The Director has also, as principal assistants, a Supervisor of Accounts, and a Solicitor. The five members of the Engineering Board constitute the intimate body of technical advisors. Obviously the decentralised organisation is only possible because of the distinct cleavage of function. See Texas Midland, 1 Val. Rep. 1, 109, 160, 176.

[2] Quoted from remarks of Mr. Worley, of the Engineering Board, Hearings, October, 1913, pp. 10, 35.

[3] Hearings, September, 1913, pp. 32, 33.

[4] Railroad Valuation, pp. 50–53.

[5] "An inventory of this character can only be prepared after an inspection of the property. Some representative of the Commission must either see the property which is included or must ascertain such facts as demonstrate the existence of that property to a reasonable certainty. If an inventory is filed by the carrier, it must be checked by the Commission to this degree of certainty, and this would mean that the work of filing the inventory would be duplicated by the work of subsequently checking the same inventory. It was felt that the total expense of preparing the inventory would be less if made by the Commission in the first instance with such assistance from the carrier as could

The engineering field work has been divided between different branches, the basis of division being the specialized skill required for the work of inventory. The road and track party, to which is attached a representative of the carrier as "pilot," [1] measures and inventories the roadway and all structures except bridges over 12 feet long, and buildings. The bridge party, consisting of two engineers (and such additional men as may occasionally be needed), one the Commission's engineer, the other, the carrier's representative, measures bridges with over a 12-foot span. The mechanical and the building party are of similar composition: the one to deal with equipment, shop tools, machinery, and simple electrical installations; the other with buildings, including full and water stations. The inventory of complicated electrical plant is done by the electrical branch, and of signal apparatus, interlocking plants, etc., by the signal branch.[2] In the case of a very simple property the road and track party may inventory bridges and buildings, but in general the Commission has found that "where properties are at all complicated, the work can be more expeditiously, more satis-

properly be called for and granted. This method avoids the duplication of effort and secures an inventory which can be vouched for by the Commission and which also reflects the claims of the carrier itself, at the least total outlay by which a result of that character could be obtained." Texas Midland, 1 Val. Rep. 1, 110.

[1] His function is described:

"A representative of the carrier, ordinarily known as a pilot, accompanies each road-and-track party. This person is an engineer of experience and ability whose duty it is to point out the property to be inventoried and to see that it is properly measured, inventoried, and classified. Before beginning work he prepares himself by a careful examination of the records of the carrier, by going over the property in advance, and by conferring with others." Texas Midland, 1 Val. Rep. 1, 112. See also Hearings, January, 1917, pp. 35, 36.

[2] Manuals governing the field work of each branch are published in pamphlet form by the Commission: "Instructions for the Field Work of the Roadway (Bridge, Building, Signal, Mechanical, Electrical) Branch of the Engineering Section, etc. See also Texas Midland, 1 Val. Rep. 1, 110–112.

The Railway Gazette (Railway Age Gazette) has from time to time published descriptions of the operations and organisation in the field. Vol. 55, p. 715; vol. 56, pp. 111, 320, 1531; vol. 57, p. 195; vol. 58, p. 1107; vol. 59, pp. 560, 569.

factorily, and more cheaply done by the several branches acting independently." [1]

The basis of the inventory is provided in the law: the classification of expenditures for road and equipment prescribed in the Commission's accounting regulations. Such items of expenditure as would not be charged to grading, clearing, and grubbing for example, are grouped under Grading, etc.[2] The units of inventory are those "current in the purchase and sale of the property . . . or commonly used in construction contracts and settlements;" the individual tie; the gross ton of rails; the net ton of fastenings; the single car.[3] But units of equipment of the same series are bulked in groups, as are standardized culverts, short trestles, and small structures generally. The ideal sought is detail "sufficient to enable the one who examines the report to form a fairly accurate judgment of the character and condition of the property." [4]

That an inventory might be secured which permitted of such a "fairly accurate" judgment without at all constituting a "ninety-nine per cent inventory," or even an "eighty per cent inventory" seems obvious. It is not the whole story to state that there has been "almost no complaint of omission . . . and comparatively little dispute as to quantities." [5] The procedure, both in the field and in the hearings, is such as to place the carriers at a strategic disadvantage. The government engineer is always in charge, and the burden of dissenting is placed upon the carrier.[6] And in the hear-

[1] Texas Midland, 1 Val. Rep. 1, 110.

[2] Ibid., p. 114.

[3] Ibid., p. 113.

[4] Ibid., p. 113.

[5] Ibid., p. 112. The railroads have all asked for the general "Contingencies Allowance."

[6] "Carbon copies of all field notes are furnished to the representative of the carrier, who signs the same as evidence that they have been correctly taken, so far as his obser-

ings, even tho the strict rules of evidence may not be applicable, and "no burden of proof is placed upon the carriers," [1] as a practical matter the burden of proof does rest upon them.[2] They must attack data presented in mechanically correct tabulations by a subordinate agency of the body which is to make the final judgment. If they have argued in general terms it is because from a strategic point of view they can do little else.[3]

But the quantity reported by the Commission for each inventory unit is at best only an estimate, a more accurate estimate than those upon which the state appraisals have been predicated, perhaps, but none the less an estimate.[4] The degree of error necessarily differs with the unit of plant measured or counted, depending upon the extent to which human judgment and not mechanical counting is significant.[5] How great this error may be can only be determined by a qualified

vation goes. If the representative of the carrier dissents upon any point, such dissent is minuted upon the notes themselves at the time.

It is generally agreed between the bureau and the carrier that such notes shall be taken as correct, unless altered by the Commission upon notice to the carrier or unless objection is filed by the carrier within a limited time.

It will be seen, therefore, that this inventory is really the joint product of the carrier and the bureau, or at all events, that the Commission's valuation forces have fully considered everything which the carrier desires to point out or to say in the completion of the inventory." Texas Midland, 1 Val. Rep. 1, 112.

[1] Texas Midland Brief, p. 234.

[2] Prouty, Memorandum, p. 73. "The presumption should be that the work is right, and it should be incumbent upon the carrier to show error with reasonable certainty."

[3] With this attitude, however, the Commission has exhibited little sympathy. Said Chairman Hall at the Hearings, March, 1917:

"Now this is the twelfth day of our hearing in this matter in which the full Commission has been sitting. The tentative reports at least have the merit of containing definite figures. The final report, the final Valuation, must contain definite figures. You say that the figures in the tentative report are wrong. We want to know the figures that are right, and thus far up to day, the 12th day of the hearing, we have not been furnished with those figures. What the Commission desires is something concrete. . . ." P. 342.

Compare Commissioner McChord:

"We have been delayed here with speeches and agreements and theories . . . let us have something practical." P. 61.

[4] Railroad Valuation, pp. 94–96. See also Winston-Salem Southbound, 1 Val. Rep. 187, 192.

[5] Texas Midland, 1 Val. Rep. 1, 144.

engineer. To point out the existence of the source of error is sufficient for the economist. The conspicuous case is, of course, the definition of standards and the classification of materials, doubly important, too, because of the necessary correlation with unit prices.[1] But the problem of estimating is by no means limited to grading.[2] The Commission's engineers have inventoried the ties (by classes) by counting the ties in two 600-foot sections in each mile;[3] the weight, kind of material, brand and standard length of rail, whether new or relay, have been noted at least once in each mile;[4] the "probable dimensions" of the accessible portions of bridges and the "probable penetration" of piles have been reported.[5] Buildings have been inventoried on the basis of cubic contents, or the square feet in side wall or floor.[6] And locomotives have been inventoried by the pound as in the Minnesota Rate cases.[7]

[1] Mr. Hunter McDonald, Chief Engineer of the N., C. & St. L. Ry. testified at the March, 1917, Hearings:

"Classification of material on any railroad is largely a matter of judgment on the part of the engineer. In some instances the actual quantities can be measured, where the stratification is absolute and well defined, but it is rarely the case that it can be measured by actual cross section, and arriving at a percentage is the only practical way to do it, and that is a question of judgment on the part of the engineer." P. 245.

See also Hearings, September, 1915, pp. 15–17; A., B. & A. Brief, pp. 147, 148; Notes and Comments, p. 264, and Texas Midland, 1 Val. Rep. 1, 39.

[2] See Railroad Valuation, pp. 57, 95, 139. Specifications for grading quantities are contained in Instructions, Roadway Branch, p. 10.

[3] Ibid., p. 11.

[4] Ibid.

[5] Ibid., Bridge Branch, p. 14.

[6] The following is Mr. Prouty's explanation:

Director Prouty: "Now I ought to say, for the information of the Commission . . . that we computed the value of buildings differently in different districts. Mr. Worley, for example, applies what is called the square foot method. That is to say he will inquire what it costs to produce a wall per square foot. . . . And so he determines the square-foot price of the floor and the roof. That is correct, is it not?"

Mr. Worley: "That is correct."

Director Prouty: "In the three eastern districts we apply what is called the cubic-foot method. We determine the cost of a building in that way. We determine the number of cubic feet in the building, and determine the price per cubic foot, and then in valuing buildings of the same type we simply determine the cubic feet in the building, and apply to the number of cubic feet, the price per cubic foot." Hearings, March, 1917, p. 920.

[7] Railroad Valuation, p. 72.

But the inventory is only half the story. Before the cost of "theoretical reproduction" can be reported, unit prices must be applied to the quantities found. And it need hardly be emphasized at this point that, in the fixing of prices, judgment — or call it, expert opinion — is the ultimate determinant. This is inevitable from the nature of the case, since there must be a correlation of the specifications and the figures of cost.[1] And more than this, too, since the Commission's unit prices are for units in place, and cost of transportation, handling, storage, installation, and contingencies must be taken into account.[2]

The program of the Bureau of Valuation has already been stated: an attempt "to report . . . the cost of reproducing the property actually in existence under *present* conditions by *present* methods and at *present* prices."[3] But altho the unit prices are reported as of June 30, 1914, the valuation date, they are not the exact prices at which the units were bought and sold, or at which contracts were signed, on that date. Such a figure might be so abnormally low, or so abnormally high, as not "in any sense . . . to represent normal or fair values." Instead the expressed purpose is to ascertain "normal prices."[4] Is not the best measure of the cost of doing a piece of work on June 30, 1914, what that work did in fact cost during the years immediately preceding that date?[5] Upon the assumption of an affirma-

[1] See Railroad Valuation, pp. 94, 95; Hearings, September, 1913, p. 30; and May, 1915, p. 96 and following.

But there has been no attempt to correlate the construction period and unit prices. See Texas Midland Brief, pp. 646, 647; Reply Brief, p. 66; and Durham, Comments . . . A., B. & A., p. 22.

[2] Texas Midland, 1 Val. Rep. 1, 81, 83, 136, 139; also Texas Midland Brief, pp. 648, 699.

[3] Prouty, Memorandum, p. 6; italics, the writer's.

[4] Winston-Salem Southbound, 1 Val. Rep. 187, 192, 193. Compare Texas Midland, ibid., pp. 135–140. This is a substantial acceptance of the basis proposed by Mr. Maltbie, speaking for the Nat'l Ass'n Ry. Com'rs, Hearings, May, 1915, p. 99.

[5] Texas Midland, 1 Val. Rep. 1, 137.

tive answer to this question (which may or may not be the correct answer — who can say ?) figures have been compiled which purport, on their face, to be correct to the final dollar.

A wide variety of supporting data has been sought by the Commission. The carriers have reported the actual prices paid for labor, and for materials and supplies, for five years (and in some instances, ten years) prior to the valuation date. These have sometimes been verified by the Commission's accountants, and sometimes manufacturers have been consulted to determine the prices at which standard materials have been furnished.[1] An average figure has then been calculated to furnish " the basis of the price applied by the Commission." [2]

All the information is reviewed by the engineers who finally fix the prices to be applied to the inventory quantities. These engineers are " men of experience and of judgment who have built, bought, and installed the kind of material or apparatus under consideration . . . practical men who bring to the question before them judgment ripened by experience . . . actuated by the sole desire of applying a proper price." [3] Accordingly the

[1] Texas Midland, 1 Val. Rep. 1, 136.

The carriers have furnished the data in compliance with Valuation Order No. 14, of February 9, 1915: " Order, instructions, and forms pertaining to purchases of materials, prices paid, and rates of compensation paid for labor."

This order required every carrier to file a statement of the two largest purchases of each class of material for each calendar year from 1910 to 1914, inclusive, together with net prices paid. In the event two purchases per year had not been made, a statement of such purchases as might have been made was required. Information with respect to the period from 1905 to 1914, inclusive, and as many as four purchases per year were in some instances required. The statement required, among other things, information as to the purpose for which the material was used, the maker, his catalogue number or reference, name of the seller, and the freight charges actually paid. The carrier was also required to report the rates of compensation paid on each separate division for each calendar year, 1910–14, to all classes of employees. This rate of compensation was defined to be the usual and ordinary rate paid for the particular occupation, and required an average for each year obtained by taking the governing rate on the first day of January, April, July, and October in each year and dividing by four. Ibid., pp. 35, 36; 136–139.

[2] Ibid., p. 137.

[3] Ibid., p. 138.

cost data so laboriously gathered are not controlling, but their use depends upon observation and comparison; ultimately upon that expert judgment of which the Commission expressed so poor an opinion.[1] But it is the expert opinion of the Commission's employees. Said Mr. Prouty:

> . . . We have declined to coöperate. When an inventory has been made up, which lists the property of the carrier by our engineers, I have insisted and I understand that my associates upon the division of valuation agree with me, that our engineer shall attach to the inventory his figures, and that he shall arrive at those prices by some independent process, and when his price has been once determined he should attach it to the inventory. Then we are glad to have him discuss prices with the engineer of the carrier, and we are glad to have him change his prices if he sees fit to do so in consequence of the discussion.[2]

Since the semi-coöperative method of making the inventory has substantially estopped challenge of quantities, the burden of the carrier attack on the figures reported has been against the prices. The Texas Midland attorneys developed the fact that Mr. Worley did

[1] Texas Midland, 1 Val. Rep. 1, 136. A very vague explanation of the method of fixing upon unit prices, as given by Mr. Worley, is quoted in Benton and Farrell, Reply Brief, Kansas City Southern case, pp. 4–8. Mr. Worley declared that unit prices had been "matters of discussion" since the day the work started:

"They have been matters of discussion and conference between the members of the engineering board in session in Washington and other places, they have been matters of conference between the engineering board and director, between the engineering board, the director, and the accountants, between the engineering board and the central cost bureau; they have been matters of discussion between the individual members of the engineering board and the carriers in his particular districts. They are a matter of conference when it comes to fixing the unit prices between the member of the engineering board, the district accountant, sometimes the valuation attorney, and always the district engineer and the assistant district engineer, with the employee at the head of the section." P. 7.

[2] Hearings, January, 1917, p. 35.

Mr. Butler complained at the March, 1917, Hearings:

"We have never known, we do not know now, how the unit prices applied to our property were determined. We simply get a tentative valuation with certain unit prices." P. 211.

Mr. Brantley (Hearings, January, 1917, p. 26) expressed his dissatisfaction over the lack of coöperation in fixing unit prices. The joint determination of such prices had been proposed in Carrier Valuation Brief of 1915, p. 142; and the attorneys for the Texas Midland stated their feeling that a "painstaking and frank conference . . . would result in good." Notes and Comments, p. 247.

not know many of the conditions governing the construction projects from which he had secured his supporting data and which would account for the wide variations.[1] Presumably the figures offered a guide for future "reproduction" only when conditions were comparable, or when the peculiar conditions were taken into account in fixing upon unit prices.[2]

Experts were also introduced by the railroads, who fixed upon higher unit prices. In answer to these claims,

[1] These are discussed in detail, Texas Midland Brief, pp. 552–649.

The following statement purports to be briefly descriptive of the facts Mr. Worley read into the record. The attorneys for the Texas Midland stated that "the difficulty is in finding out what the facts say."

Account	Range of prices	Dates	Unit Price	
			I. C. C.	T.M.
Clearing	$22.40–$54.45 per acre	1901–12	25.00	$35.00
Grubbing	22.50– 80.00 per acre	1902–12	40.00	52.00
Clearing and Grubbing	15.00– 50.00 per acre	1894–12	....	....
Earth (2 way)	.11– .18 per cu. yd.	1901–12	15	18
Loose rock (2 way)	.25– .37 per cu. yd.	1901–12	35	43
Solid rock (2 way)	.55– .90 per cu. yd.	1901–12	65	97
Bois d'arc piling	.15– .37 per lin. ft.	1898–12	40	....
Treated pine piling	.25– .35 per lin. ft.	1901–14	35	....
Haul of piling	.01– .40 per lin. mile	1900–12	....	....
Framing br. timber	9.00– 25.25 per M. B. M.	1894–12	....	....
Concrete	5.20– 18.15 per cu. yd.	1905–12	9–11.30	15.00
Burnettised ties	.35– .66 each	1901–14	.56	69
Relay rails	17.00– 26.00 per gr. ton	1909–13	24.00	29.50
Sand ballast	.02– .1085 per cu. yd.	1906–14	.15½	.36
Crushed rock	.55– .80 per cu. yd.	1910–14	.66½	.80
Laying track	125.00–650.00 per mile	1901–15	250.00	....
Train and Engine service	115.00–377.00 per mile	1906–13	225.00	....
Full earth surfacing	190.00–482.00 per mile	1903–12	220.00	....
Installing turnouts	15.00– 50.00 each	1901–12	20.00	50.00

The unit prices shown in the last two columns are an addition to the table shown on p. 243 of Notes and Comments. They are taken from the Texas Midland Brief at the pages indicated in the original table.

[2] Thus, tho he claimed to base his price of $250 per mile upon supporting data for track laying, the figures ranging from $125 to $650 per mile for work done between 1901 and 1915 over much of the country west of the Mississippi, "he could not state the weight or amount of rail laid, the number of switches per mile, number of bridges which might delay track laying nor conditions under which the work was done." Altho "all of the information was considered in determining his price," that price did not contemplate any "particular method" of track laying, being, as he thought, sufficient for hand or machine work. Texas Midland Brief, pp. 634, 635. These statements have been verified in the typewritten record.

Mr. Prouty insisted: "The presumption should be that the work is right, and it should be incumbent upon the carrier to show error with reasonable certainty." [1] The theory would seem to be that the testimony of even the most eminent expert witness hardly makes that show of scientific procedure which is created by arrays of cost figures, however incomparable and however irrelevant.[2] Nor does the respectability attach to opinions of railroad employees [3] that attaches to the "judgment" of

[1] Prouty, Memorandum, p. 73. At pp. 65–70, Mr. Prouty indicates the basis of the attitude of the Bureau of Valuation, which "in the light of what it could see and forecast believed that it would be unwise to enter into any contest with the carrier in the production of opinion testimony." He continued (p. 67): "It seemed to us that the best evidence was found in the experience of the past. The fact speaks without prejudice. It cannot be varied to suit the inclination of the parties."

In Notes and Comments, pp. 239–241, it is shown that the carriers did not (as Mr. Prouty alleged) "contend that the only proper evidence of these priced is the opinion of an expert."

[2] The data depended upon by Mr. Worley were called "a promiscuous unassimilated mass of figures gathered from everywhere" (Texas Midland Reply Brief, p. 333), and "a heterogeneous mass of inconsistent data" (p. 347). The unit prices are discussed in detail, Texas Midland Brief, pp. 556–643; A., B. & A. Brief, pp. 159, 702. The Texas Midland summarizes its attack upon Mr. Worley's unit prices for grading in the following language:

"Much of the work he had never seen. He did not know the geographic or climatic conditions (Record, p. 805), he did not know the nature of the soil, he did not know whether or not the contractor made or lost money, he knew of no method of conversion by which the figures quoted for contracts on a two-way basis could be converted to the correlative figure on a one-way basis (Record, p. 807). . . . He made no investigation of the peculiarities of the grading work on the Texas Midland," etc. P. 333.

See Texas Midland, 1 Val. Rep. 1, 39, for discussion in detail of one and two-way work. See also Texas Midland Brief, pp. 576–643, for criticism of other unit prices, and the Protests, Texas Midland, pp. 17, 18; A., B. & A., p. 21; Kansas City Southern, pp. 20–30; N. O., T. & M., pp. 24–28.

[3] Prouty, Memorandum, pp. 71, 77, where the Director points out that the engineers of the Santa Fe and St. Louis Southwestern were not disinterested witnesses.

"The prices established and approved in case of the Texas Midland must have a most important bearing upon the prices which are applied to these properties." P. 71.

See also the opinion of the Commission:

"The unreliability of mere opinion evidence is well understood by all those who have ever had experience with it. An opinion is personal to the man who gives it. It depends upon his education, his mental habit, his present mental state. It is influenced by his environment and often controlled by the objective point which he desires to reach. The same man may hold different opinions upon the same subject at different times.

Perhaps the most serious infirmity of opinion evidence is that the witness may be selected at the will of the one producing him. A fact must be established by those who have knowledge of it, who were present and saw it, for example, but an expert can be brought from the ends of the earth, and a dozen may be rejected until the right one is found. Given time and the money, almost any opinion can be had within certain limits." These paragraphs are taken from Prouty, Memorandum, p. 65.

"practical men," government employees instructed to be fair, who, having considered all the cost data and examined the work to be done "theoretically," "finally reach a price which in their judgment is right." [1] But whether unit prices fixed in one way or fixed in the other are more truly a measure of what it would cost to reproduce a railroad "theoretically," who can say? The Commission has been content to accept the Bureau's figures, the figures of the tentative valuation being made final except where the Bureau has later agreed that increases would be "fair." [2] But from the nature of the case the ultimate determinant is judgment, and the figures reported are only estimates. Any accuracy professed for them is largely specious.[3]

"Overhead charges" have been handled by the Bureau on conventional lines. For "general expenditures" and "engineering," resort has been had to the bulk percentage expedient of the state appraisals.[4] Preliminary estimates based on a "synthetic" program which produced the costs of the essential preliminary organization have been abandoned in favor of the short cut,[5] which, however, has been presented as an attempt to apply the test "applied in the development of prices, namely, the actual experience of the past." [6] Do the facts justify the claim?

For general expenses, 1½ per cent of the road accounts except land has been fixed upon as "about right for the

[1] Prouty, Memorandum, p. 68. See, however, Notes and Comments, pp. 246, 247.
[2] Kansas City Southern, 1 Val. Rep. 223, 238, 254.
[3] Railroad Valuation, p. 96.
[4] Ibid., pp. 73, 95.
[5] Texas Midland, 1 Val. Rep. 1, 29, 47.
[6] Ibid., p. 142.
The Commission's Statistical Study is explained in detail, with illustrative charts, in Hearings, March, 1917, pp. 879–903, the testimony of Mr. D. E. Brown, the Supervisor of Accounts.

average case." [1] This figure has been chosen after an examination of the costs in constructing four properties where the facts are known: the Virginian, a "fairly illustrative" case, 1.593; the Winston-Salem Southbound, where "careful review" by the accountants shows 1.271; the Las Vegas and Tonopah, an "independent company," 1.224; and the Tonopah and Tidewater, "of recent construction," 1.775.[2] The numerical average of these four sets of figures is 1.466, but it is impossible to say to what extent the Bureau has been guided by this fact.[3] These figures are simply supporting data; independent judgment is assumed to fix upon the percentage of 1.5.[4] It is not at all a question of "actual experience."

The resort to typical roads, rather than to general average figures, is due to the unsatisfactory nature of the average figures. The study of 121 projects in different sections of the country, ranging from 2½ to 900 miles in length (total mileage: 9617), gave the following average percentages for the valuation districts:

Eastern	1.766
Southern	2.251
Central	1.362
Western	.838
Pacific	4.086
Average	1.930

The abnormal variations represented by the Western and Pacific groups are readily explained: roads in the

[1] Prouty, Memorandum, p. 39.

General Expenditures include the following accounts of the Commission's classification of investment in road and equipment: Organization expenses; General officers and clerks; Law; Stationery and Printing; Taxes, other expenditures — general. For a discussion in detail of these and other "overhead charges," see Memorandum on Overhead Charges in Valuation, published by the Presidents' Conference, July 25, 1917.

[2] Prouty, Memorandum, p. 39.

[3] Notes and Comments, p. 156.

[4] Texas Midland, 1 Val. Rep. 1, 30, 33; Kansas City Southern, 1 Val. Rep. 223, 257.

western group were built by parent companies, and many general expenses were borne by the latter; while the extended construction period of the Western Pacific throw the Pacific figures out of line.[1] Because no one knew, when the four roads were chosen for study as standards, "what the figures would show, and no attempt was made to support any preconceived theory, the sole desire being to ascertain the fact," the Commission believed the results obtained "fairly representative."[2] This was the answer to the carrier claim that, taking six other roads, as "typical" as those selected by the Commission, a figure between 4 and 7 could be sustained.[3]

The percentage for engineering, fixed upon after a study of the same 121 projects,[4] is no more significant:

> The amount found charged to engineering varied from 0.837 per cent to 9.732 per cent of the total amount shown as investment in road excluding land. In six instances the percentage for engineering exceeded 6 per cent; in ten instances it was between 5 and 6 per cent; in four instances it was below 1 per cent, and in sixteen instances between 1 and 2 per cent. In the balance of instances, eighty-five, it ranged from 2 to 5 per cent. The weighted average showed approximately 3.6 per cent.

Accordingly a maximum of 5 per cent and a minimum of 2 per cent have been set, tho it is left to the Com-

[1] Texas Midland, 1 Val. Rep. 1, 30.

[2] Ibid., p. 30. The Commission concluded:

"From what has been stated we are of the opinion that an estimate of 1½ per cent on all road accounts except land for general expenditures will do justice to the carrier." P. 31.

[3] Notes and Comments, pp. 156, 157. The six roads were the Beaumont & G. N., 49 miles, 5.827 per cent; Crosbyton-Southplains, 40 miles, 4.434 per cent; Rocky Mountain & S. F., 107 miles, 5.498 per cent; Santa Fé, P. & P., 197 miles, 4.893 per cent; C. M. & Gary, 99 miles, 7.094 per cent; Western Pacific, 926 miles, 5.074 per cent.

[4] The attorneys for the Texas Midland protested that 75 per cent of these projects represented subsidiary lines where it was safe to assume no charge had been made for the services of the Chief Engineer and his force, and showed that the Commission's accountant had made no inquiry on this score (Hearing, March, 1917, p. 901). Instances were cited where no such charges had been made. Notes and Comments, pp. 139–146. The figures too were based largely on accounts erected prior to 1907, when the Commission's uniform regulations were made effective. Ibid.

mission's engineer to determine the exact allowance in each case. Should he believe that there are "peculiar circumstances" to justify the use of a lower or a higher percentage, he is instructed to bring the case to the attention of the Bureau.[1]

Here, perhaps, the carriers have again placed too great dependence upon the testimony of experts.[2] Mr. Charles Hansel even testified that the percentage method, which other railroad experts had approved,[3] was neither proper nor accurate. Too many factors varied as between different properties.[4] He proposed, by comparing the conditions governing the Virginian, where engineering cost was known, with conditions on the road under consideration, to estimate the reproduction cost of engineering on the latter. For the A., B. & A. he secured a figure of 8.55 per cent, an "unusual and extraordinary" figure for a road which he acknowledged to be "ordinary" and "normal."[5] This result furnished the theme for Mr. Prouty's denunciation of expert opinion, repeated by the Commission in the Texas Midland case.[6]

The original figures compiled for the Texas Midland were built up on the synthetic basis before the decision

[1] Texas Midland, 1 Val. Rep. 1, 28.

[2] Figures compiled by the Presidents' Conference Committee, showing an average of 4.40 per cent were also introduced by the carriers, Prouty, Memorandum, p. 66. Mr. Newton of the C., B. & Q. introduced a synthetic estimate for the Texas Midland, Hearings, March, 1917, p. 290 and following; see Texas Midland Brief, p. 656.

[3] See, for example, testimony of Mr. J. E. Willoughby, Chief Engineer of the Atlantic Coast Line, Hearings, March, 1917, p. 139. Mr. Willoughby placed the engineering figure at 5 per cent, for the Southeast.

[4] Hearings, May, 1915, p. 42 and following; March, 1917, p. 816 and following; summarized, Notes and Comments, p. 249. See also Texas Midland Brief. At p. 651, it is said:

"A mere list of percentages of engineering cost of total construction cost without comparison of conditions in each case with those existing on the road under valuation is meaningless."

[5] Prouty, Memorandum, p. 66; Notes and Comments, pp. 247–251.

[6] Memorandum, p. 66; see comments of Mr. Brantley, A., B. & A. Brief, p. 172. Mr. Brantley insisted that the Commission's engineer working under Washington orders was applying a preconceived theory, whereas Mr. Hansel was "searching for the truth alone."

to resort to percentages had been made. But the result, translated into terms of percentage, gave 2.15 per cent, which Mr. Worley felt was an adequate allowance in view of the simple conditions governing the construction of the road.[1] The carrier claimed that a percentage of 5 or 6 would be more nearly adequate; while the Commission upon further consideration (the details of which are not made apparent) increased the percentage to 2¼ per cent. Taken in connection with certain changes in the base figures, this gave a net increase in the "valuation" figures, from $54,926, the tentative allowance, to $58,773.[2] For the Winston-Salem Southbound, the allowance of 5.4 per cent was not protested,[3] for the Kansas City Southern, 4 per cent was allowed over the carrier's protest.[4]

"Interest during construction" (a function of two variables: the theoretical rate of interest and the theoretical construction period) adds more hypothesis and estimate.[5] When the Bureau found that an attempt to appraise the credit standing of each carrier led to a most delicate analysis, it resorted to hypothesis. Let the "reconstruction be done by a company possessing good credit and able to buy supplies at advantageous prices." Then "since a railroad with good credit has no difficulty during normal times in borrowing money at 4½ per cent . . . the rate of 6 per cent would be

[1] The carriers insisted, however, that with relatively inexpensive roadway construction costs, such as appeared in the Texas Midland reproduction, the greater was the percentage of engineering, due to the presence of overhead costs which did not vary. Said Mr. McDonald of the N., C. & St. L.: "As a general rule the greater the cost, the smaller the per cent where there are no other complicated conditions of construction." Hearings, March, 1917, p. 738. See also Hearings, May, 1915, p. 43 (Mr. Hansel); and A., B., & A. Brief, p. 170.

[2] Texas Midland, 1 Val. Rep. 1, 45.

[3] Winston-Salem Southbound, 1 Val. Rep. 187, 209; see, however, Protests, A., B. & A., p. 27; Kansas City Southern, pp. 18, 19; and E., J. & E., pp. 25, 26.

[4] Kansas City Southern, 1 Val. Rep. 223, 253.

[5] Railroad Valuation, pp. 76–78.

ample to cover all incidental items of expense." [1] And so 6 per cent has been chosen to be applied to all carriers, with the added result that upon this basis the cost of reproducing different properties is "fairly comparable." [2]

Six per cent has been chosen after an examination of the sale of bonds of various kinds for the five years preceding June 30, 1914 had "led to the belief that this rate would be ample to cover not only the interest on the money but any brokerage which would usually be charged for the obtaining of the money." Furthermore, "six per cent is the legal rate in a large section of this country where no other rate is specified." [3] At the preliminary conference of May, 1915, Mr. W. B. Bailey, the General Auditor of the Santa Fe had asked for 7 per cent as a minimum.[4] Eight per cent was asked by the attorneys for the Texas Midland,[5] but the rate of 6 per cent was used by the Kansas City Southern.[6]

The tentative valuation of the Texas Midland utilized the formula developed in previous appraisals for calculating the amount of interest: allowance was made for one half the construction period upon the total expenditures, exclusive of land and interest.[7] Carrier

[1] Texas Midland, 1 Val. Rep. 1, 154.

[2] Ibid., p. 31; Kansas City Southern, 1 Val. Rep. 223, 257.

[3] Texas Midland, 1 Val. Rep. 1, 154.
In their Kansas City Southern Brief, Messrs. Benton and Farrell cite the fact that 6 per cent is the legal rate of interest in Missouri. P. 9.

[4] Hearings, May, 1915. Mr. Bailey said:
"Measured by principles recognized in court decisions, after giving due weight to all the conditions surrounding railway operations, and the well recognized fact that interest rates on all classes of railway securities have shown an upward tendency for some years past, 7 per cent is the minimum rate that should be used in determining interest during construction." P. 51. See also Carrier Valuation Brief of 1915, p. 111.

[5] Brief, p. 693. It was insisted that the Texas Midland, which had been unprofitable was not a "safe" investment, pp. 690–692.

[6] Brief, pp. 219–221.

[7] Railroad Valuation, p. 77; Kansas City Southern, 1 Val. Rep. 223, 257.
The failure to charge interest against land (the purchase of which is an obvious first cost) is due to adherence to the letter of the opinion in the Minnesota Rate cases: "it

experts evolved much more intricate and more ingenious formulae,[1] and Mr. Prouty, in his Memorandum, expressed the opinion that a fairer basis would be to calculate interest for half the construction period plus three months on construction accounts, and for three months on the equipment accounts.[2] Changes in the Texas Midland, Winston-Salem Southbound and Kansas City Southern figures were made upon this basis.[3]

The construction period depends entirely upon the opinion of the Commission's engineer, upon his reproduction program, and thus ultimately upon the reproduction hypothesis. Since the reproduction represents, theoretically, an entirely new project, the actual construction period is not of binding significance. The Bureau engineer has decided upon the period within which the work might be economically done, recognizing the usual delays due to labor and market conditions, but barring delays due to financial troubles, etc. And his opinion has governed.[4]

III. Depreciation

Cost of reproduction less depreciation introduces new elements into the hypothesis. The railroad, "theoretically reproduced" in a new condition, is next (and immediately) theoretically worn to the age and condition of the existing road and equipment.[5] Not that cost of

was error to add to the amount taken as the present value of the lands, the further sums . . . interest during construction." 230 U. S. 352, 455. See Hearings, December, 1917, pp. 17, 128 (Mr. Farrell); Texas Midland Brief, p. 681; A., B. & A. Brief, p. 637; Kansas City Southern Brief, p. 220; and the individual Protests.

[1] Texas Midland Brief, pp. 687–689, citing testimony of Mr. A. W. Newton, Hearings, March, 1917, p. 298; and of Mr. A. L. Conrad, p. 306.

[2] Pp. 45–47. There is more extended discussion in the Texas Midland opinion, 1 Val. Rep. 1, 155–158.

[3] Ibid., pp. 1, 33, 196, 257.

[4] Texas Midland, 1 Val. Rep. 1, 32; Kansas City Southern, 1 Val. Rep. 223, 256.

[5] The following excerpt from the A., B. & A. Hearings is quoted in the A., B. & A. Brief, pp. 330, 331:

Mr. Brantley: "Well don't you think it is rather a contradictory statement to say that on June 30, 1914, the property had just been completed new, and the cost to re-

reproduction less depreciation reproduces the railroad with second hand materials. Where, for example, can one find "the millions of second hand ties" — unless, to be sure, they are made available by the "mental obliteration" of the existing roadbed ?[1] Nor is reproduction cost determined in terms of the selling price of second hand materials.[2] On the contrary, cost of reproduction less depreciation seeks to measure how much of the hypothetical present investment (cost of reproduction new) remains unimpaired after the new plant units are assumed to be worn and aged to the condition of the existing units.

Appraisal of accrued depreciation, or the determination of hypothetical depreciation measured in terms of accrued depreciation, is much complicated by the fact that obsolescence ("functional depreciation") is so important a consideration in railroad operations. Progress of the arts has quickened the force of the inevitable physical wasting. "The steel bridge has been removed because it could no longer carry the heavier rolling stock which modern methods of operation have rendered imperative. Cars and engines have been discarded, not for the reason that further repairs could not be made, but rather because the type had become obsolete."[3]

produce is $22,546,132, and that on the same data, it is in a depreciated condition . . . $17,960,584 ?"

Mr. Jones: "Why there is some theory in the proposition, of course, and the theory is that you are reproducing it on that basis — you reproduce it new, and that theory, of course, is an estimate on certain assumptions. Part of the property is there and has been there, and depreciation is estimated on the basis of what is there."

[1] Condition Per Cent, W. G. Brantley, pp. 11, 32; see also A., B. & A. Brief, pp. 454, 461, 547, 548, and testimony of Mr. C. S. Churchill of the Norfolk & Western, quoted, ibid., p. 523.

[2] Texas Midland, 1 Val. Rep. 1, 69, 70.

[3] Texas Midland, 1 Val. Rep. 1, 127; see also Hearings, June, 1917; and especially, the testimony of Mr. D. F. Crawford, general manager of the Pennsylvania Lines West, p. 21. The carrier attorneys have sought, at great length, to demonstrate, what no one has seemed disposed to deny, that retirements of equipment have been made for inadequacy, and that seldom, except "to keep a series complete," has equipment been replaced in kind.

Because the railroad business is in this "dynamic" state, the data upon which to calculate for the future are rendered slender. There is, for example, substantially no information upon which to gauge the probable working life of steel equipment. Surely experience with wooden cars is inconclusive. It is even conceivable, as says the Commission, that electricity may supplant steam as a motive power, or that some discovery may do away with both steam and electricity.[1] "Total life" calculations from the nature of the case, therefore, involve prophecy, and introduce a second source of uncertainty into the appraisal of depreciation.[2]

The Commission has met the difficulty created by the importance of obsolescence by giving the benefit of the doubt to the railroad. Only imminent functional depreciation is considered. If a bridge is too light for the equipment, and should be removed, or if station facilities are too small for the business, "the depreciation has already taken place." Likewise, "if for example the railroad has already begun to remove bridges of a similar type, because they are too light, this fact must be considered." Or, "if, while the station may do for a few years to come, plans are already being considered for its replacement, the architect must not close his eyes to this circumstance, and look only to the physical condition of the property." But only that functional depreciation which can be "accurately forecast" is considered. There must be no resort to "speculation."[3]

[1] Texas Midland, 1 Val. Rep. 1, 127.

[2] See Railroad Valuation, p. 78 and following, for an elaboration of the discussion here so briefly outlined.

[3] Texas Midland, 1 Val. Rep. 1, 127, 128; see also the discussion by Messrs. Brantley and Prouty, Hearings, September, 1915, p. 48. Mr. Wells, the general manager of the Texas Midland, introduced the instance of a bridge on his road in which, he insisted, there could be no functional depreciation since it was capable of handling much heavier loads than in all probability would ever be turned over to the road. Hearings, March, 1917, p. 858. In Condition Per Cent, Mr. Brantley asserted (but did not prove) that there was "no justification" for considering possible obsolescence of equipment in fixing a figure of depreciation, p. 17.

So, for example, neither excavation in cuts or tunnels, nor embankments, have been depreciated, altho it is quite within the realm of probabilities that changes of line in curvature elimination or grade reduction, such as those which gave rise to the Kansas City Southern controversy,[1] may be of importance in the future, as in the past.

Even where standard normal life figures have been promulgated, recognition of the fact that maintenance and service factors necessarily govern the individual case has led the Commission to permit its engineer to fix the total life for items of plant inspected.[2] The logic of this practice is evident enough when it is realized that the standard figure is itself only an average "estimate," based upon "observation," and "opinion," and a great "amount of study . . . mainly in the way of collecting statistics."[3] How the figures reported in the Engineering Board Memorandum were fixed upon is perhaps adequately explained by the Commission:

> It has been said that the average life of steel bridges in this country has not exceeded 30 years. This may be true; our studies would indicate that some comparatively short period would represent the active service life of that structure; but it is also perfectly evident that this has been due, not to the actual wearing out of the bridge, but to its inadequacy. It is further not apparent that the same cause will be operative to the same extent in the future.

[1] Kansas City Southern Ry. Co. v. U. S., 231 U. S. 423. See also Mr. Prouty's discussion of the surplus, Eastern Advance case of 1910, 20 I. C. C. 243, 271, quoted, Railroad Valuation, p. 116.

[2] "Let it now be assumed that the same kind of a structure which has been in place for 30 years is under inspection. Observation shows that this structure, either through lack of proper maintenance or due to its location or from some accident of its use, is badly corroded and otherwise worn. If the same rate of depreciation continues for another 10 years the structure must be replaced. In this case the engineer would reduce the probable life from 70 years to 40 years; the bridge would be three-fourths worn out and its condition per cent would be 25/100.

Upon the other hand, an observation of this structure might show that it had been perfectly maintained and at the end of 30 years was apparently as good as at the beginning. The engineer might feel that this bridge was likely to continue in service for more than another 40 years, and in that event he might increase the total life as a result of his inspection from 70 to 80 years. The condition in this event would be not 40/70 but 50/80." Texas Midland, 1 Val. Rep. 1, 129.

[3] Ibid., p. 126.

Thirty years is not, therefore, used as the total life by which steel bridges are to be depreciated. There is no way in which a satisfactory total life can be fixed for a structure of this character, but the engineers have decided that, taking all things into account, 70 years will probably fairly represent that period; certainly it is sufficiently long for an average life, and this figure for total life is used in the depreciation of steel bridges.[1]

And, upon the same basis, concrete and masonry (the use of the one being substantially in an experimental stage, so far as length of life is concerned) are assigned a normal life of 100 years; timber structures, of 50 years; cast iron culvert pipe, a normal life of 80 years, and other steel or iron pipe, of 30 years.[2] Rails are held normally to have two cycles of life: new to relay; and relay to scrap. The first cycle for a particular carrier (or for a particular division of the same carrier) is determined by a statistical study of rail renewals; the second cycle, on the basis of 50 years, etc., etc.[3] How conclusive this study of rail renewals may be is indicated by the contentions in the Texas Midland case. Twenty-five years was originally fixed upon by the Commission's engineers. Mr. Wells, the General Manager, claimed 80 years, but the tentative valuation reported figures based upon the 25-year normal life. After conferences, the Bureau recommended an increase to 40 years, and figures calculated on this hypothesis were made "final" by the Commission's order, which recognized that "no definite figure can be named with absolute certainty."[4]

The inventory inspection has served to set the actual life standard used (where the normal has been departed

[1] Texas Midland, 1 Val. Rep. 1, 128.

[2] Engineering Board Memorandum, No. 226, ibid., p. 184. The same normal life (100 years) is assigned to masonry in such different structures as tunnels, culverts, piers and buildings.

[3] Ibid. It is provided also that rail originally laid new in side tracks, and to be used in this service until scrap, shall be given a normal life of 75 years.

[4] Ibid., p. 52. The opposing contentions are discussed, Hearings, March, 1917, pp. 855, 872.

from) and has furnished the data from which the cost of reproduction less depreciation figures have been calculated. Instructions provide for careful and detailed notes of observation covering the age, wear and tear, maintenance and probable service life of the inventory units.[1] Some short cuts have been invoked. Where renewals have become uniform in quality and quantity, the service condition (i. e., the percentage of cost of reproduction now reported as cost of reproduction less depreciation) of ties " shall be considered as 50 per cent," while, under similar conditions, for rails in yards and for frogs and switches " a service condition of 50 per cent may be used." [2] All locomotives and all passenger cars are inspected, but " ordinarily not less than 10 per cent " of the freight cars (" and as many more as may be necessary to furnish a fair basis "), in order to secure a standard of condition to be applied to the entire series.[3] Splice bars and bolts are " depreciated in

[1] Instructions for Field Work, etc., Roadway Branch, p. 8; Bridge Branch, p. 10; Building Branch, p. 10, etc. For ballast " no mortality tables or statistical data were available," and entire resort was had to observation. Texas Midland, 1 Val. Rep. 1, 83.

[2] Engineering Board Memorandum, No. 226, Texas Midland, 1 Val. Rep. 1, 184.

[3] Instructions for Field Work, etc., Mechanical and Electrical Branch, p. 10; see Hearings, January, 1917, p. 175; March, 1917, p. 861; and Protest, N. O., T. & M., p. 17.

For equipment, which by repairs and renewals, many witnesses (Mr. Julius Kruttschnitt, Hearings, March, 1917, pp. 309–323; Mr. J. E. Muhlfeld, p. 743; Mr. Harry T. Bentley, p. 803; Mr. C. E. Chambers, p. 763) testified could be indefinitely continued in service, and for which therefore they alleged that it was impossible (especially in view of the instructions of the Commission to ignore all except " imminent " obsolescence) to fix a total life, the Commission has fixed a " weighted average condition per cent ":

" While the life of the car itself may be indefinitely prolonged, the different parts of that car wear out and must be replaced. The car is therefore divided into three such parts, the trucks, the underframe, and the body, and each one of these parts is depreciated by itself. The three are then combined into a weighted average from which the condition per cent of the car is determined. The weighted average may be taken itself as the condition per cent or may be reduced if the type of the car is such that its use will not be continued in the future.

" The same rule is applied to locomotives and other rolling stock and also in a degree to certain buildings and structures." Texas Midland, 1 Val. Rep. 1, 53; compare testimony of Mr. Prouty, Hearings, March, 1917, p. 861.

An invalid objection is raised to this method by Mr. Brantley (Condition Per Cent, p. 17) alleging that " inconsistent results . . . will depend upon the date of the valuation," on account of additions by shopping, etc.

cycles on the same basis as the rail with which they are used"; spikes, "on the same basis as the ties."[1] And, altho it is stated as a governing "principle" that labor depreciates with the items of property of which it is a part, engineering, largely a labor cost, is not depreciated.[2]

The carriers have attacked, not the statistical adequacy of the depreciation figures, but the premises upon which the Commission's engineers have worked, and upon which, therefore, the depreciation figures are predicated.[3] The difference is one of fundamental definition.[4] "The witnesses called by the carriers — men of candor, ability and experience — while fully recognizing deterioration from age and use and the necessity of repairs and replacements of perishable elements, state that *in the absence of deferred maintenance, there is no depreciation.*"[5] Deterioration is not depreciation; dete-

[1] Engineering Board Memorandum, No. 226, Texas Midland, 1 Val. Rep. 1, 184, 185.

[2] Ibid., pp. 183, 151. The other overheads are depreciated (p. 153); tho the reason assigned for failure to depreciate engineering (a cost spread over the whole of a depreciated plant), that of difficulty, would seem to apply with equal validity.

[3] The Kansas City Southern, "solely for the purpose of comparison with the results reported by the Commission," since the carrier denied "the right of the Commission to deduct any sum or amount whatsoever from the Cost of Reproduction New," and insisted "that there was no depreciation as of June 30, 1914," introduced a table comparing a "carrier's Condition Per Cent" (relating "to different pieces or elements of the railroad property when considered separately and not as a part of a going concern") and the "Commission's Tentative Condition Per Cent." Protest, pp. 43–45. For 25 of the 30 accounts the carrier figures were higher than the Commission's figures, and for 4 of the remaining 5 the difference was less than 2 per cent. For 9 of the 25 accounts, the difference was 5 per cent or under, for 7, 6–10 per cent; for 3, 11–15 per cent; for 3, 21–25 per cent; for 1, 32 per cent, and for 1, 34 per cent. In terms of dollars, the differences would be more considerable, since applied to higher carrier figures.

[4] Texas Midland Brief, p. 743; Texas Midland, 1 Val. Rep. 1, 48.

[5] Texas Midland Brief, p. 743, also p. 247. The most notable witness was Mr. Julius Kruttschnitt, Hearings, March, 1917, beginning at p. 309. The following excerpt from his testimony is typical:

Mr. Brantley: "Mr. Kruttschnitt, as a maintenance man, I would like to ask you this question. If a government inspector went over your road and reported, for instance, that your track, that is, the ties and rails and so forth, was in 80 per cent condition or

rioration exists only in simple properties, there being no depreciation in a composite property, say the track, consisting of partially worn (deteriorated) rails, ties, fastenings, etc., unless repairs and replacements have been neglected. The whole is something more than the sum of its parts.[1]

The carrier interests, using the fundamental definitions of depreciation and capacity for service promulgated by the Commission's engineers, have sought to apply these definitions to their own depreciation concept. The Commission's definition of depreciation — " the lessening in worth of physical property due to use or other causes " [2] is unfortunate, since, in a going concern where the units of plant do not come on the market as second hand, depreciation measures, not a lessening of worth (" value," in the sense of selling price), but the portion of the investment used up in furnishing past services.[3] The carriers have therefore quite justly

85 per cent condition, what would you conclude that he had found with respect to your obligation of maintenance — that you had neglected it for a year or two ? "

Mr. Kruttschnitt: " Fifteen per cent deferred maintenance is a great deal, a very great deal, according to the figures read out here. It is a year and a half maintenance on one system of ours and a year and a quarter on the other. Knowing our system as I do, I should be very skeptical, and should, if permitted, confer with him, and ask ' I want you to show me how you have reached this conclusion.' Assuming that our track had a million ties in it, 15 per cent depreciation or deferred maintenance would mean that our officers had failed to put in 150,000 ties that they should have put in, and I should ask the inspector to walk over the track with me and show me the ties that he thought ought to come out. If he did so I should be much disappointed because our people had not obeyed instructions, but I could not find any fault with his conclusion. On the other hand, if he could not show them I should conclude that he was in error.

Mr. Brantley: " So that as a maintenance man you would understand his statement that your track was in 85 per cent condition to mean that there was 15 per cent there of neglected maintenance ? "

Mr. Kruttschnitt: " Yes."

Director Prouty: " You could not put any other construction on it ? "

Mr. Kruttschnitt: " No. I cannot conceive what other construction I could put on the language." P. 316.

[1] See Railroad Valuation, pp. 122–124, and especially the excerpts there quoted from the Carrier Valuation Brief of 1915, pp. 162, 166, 231–237; the Protests of the individual carriers, Texas Midland, pp. 24, 25, A., B. & A., pp. 66–68, 80; and Hearings, September, 1915, p. 35.

[2] Engineering Board Memorandum, No. 226, Texas Midland, 1 Val. Rep. 1, 183; see also the discussion, p. 125 and following.

[3] Depreciation is thus the accounting recognition of the " ripening " into product of a part of the savings embodied in the plant: an adequately accumulated depreciation

maintained that the Commission has enunciated a definition in terms of worth, or value, only to report figures in terms of a loss of service units, or of the exhaustion of "capacity for service," itself an ambiguous phrase.[1] This ambiguity, also, the carrier has hit upon. "A locomotive twenty years old . . . will pull the same load," [2] and the track composed of half worn materials possesses as much capacity for service (i. e., as many trains can be run over it per day) as an entirely new track.[3] "It would be folly and waste to attempt to have all of the parts new all the time." [4] Its "value in use" is as great as that of a new track.[5] "The value of

reserve measures the extent to which the "ripening" process has gone; the difference between investment and this total accumulation measures unimpaired investment. See Railroad Valuation, pp. 117, 118.

Mr. Jones, the Commission's District Engineer in charge of the A., B. & A. work defined depreciation as "expired cost." Quoted, A., B. & A. Brief, p. 453.

[1] Texas Midland Brief, p. 743. Mr. Brantley had, however, defined depreciation as "the loss in service life." Hearings, May, 1915, p. 85.

[2] Texas Midland Brief, p. 730.

[3] Condition Per Cent, W. G. Brantley, p. 23, also pp. 8, 9.

This meaning of capacity for service is not the meaning attached to the words by the Commission. This should be clear from the explanation:

"The bureau has treated depreciation as the exhaustion of capacity for service. It has inquired how much of such capacity existed when new, what part still remains. It states the remaining capacity as a fraction of which the total is the denominator and the part remaining the numerator. Taking cost of reproduction new the depreciation which has already accrued is subtracted, due consideration being given to salvage or scrap when this exists, and the remainder is given as cost of reproduction less depreciation." Texas Midland, 1 Val. Rep. 1.

[4] Texas Midland Brief, p. 744; see discussion by Mr. Brantley, Hearings, May, 1915, p. 77 to the same effect.

[5] Mr. Brantley, ibid., p. 67, cites the Backus case, where the Supreme Court said, 154 U. S. 430, "And when the statute provides that such property shall be assessed at its true 'cash value' it means to require that it shall be assessed at the value which it has as used and by reason of its use." He then continues, "We are of the opinion that the value to be ascertained is the value of the property as used and by reason of its use. If this be sound, it would follow that the depreciation to be ascertained in 'cost of reproduction less depreciation' is that deterioration in physical property whereby its value in use is affected."

In his Condition Per Cent, p. 10, Mr. Brantley said:

"A railroad property cannot be maintained and its full 'capacity for service' continued, except by a constant and continuous replacement of its various plant units. The thing sought is not a continuous condition of newness for each plant unit, but is a continuous condition of full and complete 'capacity for service.' A plant unit with its 'full capacity for service' existing at the date of valuation, cannot be said to be depreciated because its 'capacity for service' will expire two, four, eight or twenty years hence. Its 'full capacity for service' existing on valuation date, there is no depreciation then existing, and the fact being that whenever its 'capacity for service' ends, the

the investment is measured by the service that the combination of the various plant units in use can render, and so long as this service continues complete for the purposes desired, there is no loss in worth of investment, and hence no depreciation." [1] In "normal service condition" the track, composed of deteriorated simple properties, possesses its "full capacity for service"; and the same is true of adequately maintained equipment and structures.[2] In lieu of the "impossible guessing about the future life of a property," the carriers would establish "a proper standard of operating conditions for each railroad property," depreciation to be noted only to the extent to which the owner has allowed the property to depart from that standard of unity or 100 per cent.[3] Plant worn to the normal state of depre-

carrier will not be called upon to make any new investment of capital in order to obtain a new plant unit to take its place, but may charge the cost of same to operating expenses, such future depreciation cannot affect the value of the investment on the date of valuation."

[1] Condition Per Cent, p. 7. See also Protests, Individual Carriers.

[2] Ibid., p. 32. See also A., B. & A. Brief, p. 527; and Texas Midland Brief, pp. 718, (ties); 724 (equipment); 725 (bridges, trestles, and structures). In Condition Per Cent, Mr. Brantley even insisted that replacements caused by obsolescence involved "no suggestion of loss of capacity for service," p. 15.

[3] Hearings, September, 1915, p. 44; also Texas Midland Brief, p. 722, where, premised upon Mr. Kruttschnitt's testimony, it is stated, "The same standard, that is unity of 100 per cent, should be used for all railroads and the principles to be followed are general and apply equally well to the Pennsylvania, New York Central, A., B. & A., Texas Midland, or any other railroad." The proposed process of determination can be given in Mr. Kruttschnitt's words:

"The questions asked by the Commissioners evidence the difficulty they seem to encounter in prescribing what is the proper standard of maintenance as to ties — that might be made general; I simply take ties as an illustration — to which the condition of roads under valuation should be referred. The same standard — that is, unity, or 100 per cent — should be used for all roads and the principles to be followed are general and apply equally well to the Pennsylvania, New York Central, A., B. & A., Texas Midland, or any other road, and is the method I have used on more than one occasion when reporting on roads the purchase of which was under consideration by our company.

"1. Determine total number of ties in the track to be valued.

"2. Determine, preferably at the time just after the annual renewals have been completed, how many ties remain in the track that should be removed at that time. This count to embrace either the entire mileage or typical miles from which the count on the whole road could be deduced.

"3. Determine the average life of ties from the records of the carrier to be valued, or if these are defective, determine the information from the best available sources.

"For illustration, let us assume that there are 1,000,000 ties in the road to be valued, and that their average life is 10 years, from which it follows that depreciation will be

ciation (or what the railroads call deterioration) would, if maintained to the standard set, be reported as undepreciated. Cost of reproduction new and cost of reproduction less depreciation coincide.[1] So runs the carrier plea.

But all this assumes that maintenance in a state of working efficiency is maintenance of the investment. Investment (or hypothetical investment, cost of reproduction) is made in terms of dollars, and can only be measured in terms of dollars. Maintenance of the investment is attained through "putting earnings back into the property" equal to the amount of original investment used up in furnishing current services, however true it may be that a state of working efficiency (ability to turn out ton-miles in a given period) has been the ideal sought by the engineer to whom the financier has delegated the problem of establishing operating and maintenance standards. But the cost of much existing railroad plant has been charged to operating expenses and maintenance in the past. Extensions and equipment purchases have been financed out of earnings. It is

fully offset and arrested if the annual renewals are substantially 100,000 ties. If on inspection and count the conclusion is reached that the number of ties to be removed is negligible, it *proves absolutely*, without further relying on the judgment or estimates of any inspector, that all necessary renewals have been made, depreciation fully arrested, and the condition of the ties standard, or 100 per cent.

"4. If actual count shows that 50,000 ties should be removed after annual renewals have been made, it shows that the unarrested depreciation is 50,000 divided by 1,000,000 or 5 per cent. If the number of ties to be removed amounts to 175,000, the depreciation is 175,000 divided by 1,000,000, or 17½ per cent. If the number to be removed is 500,000, the depreciation is 500,000 divided by 1,000,000, or 50 per cent."

[1] Mr. Brantley summarized his contention:

"As to any piece of property which could not on the date of valuation be reproduced under a rational and reasonable engineering program, for less than its cost new . . . that the cost of reproduction less depreciation must be the same figure as the figure of cost new." A., B. & A. Brief, p. 465. He had previously said, p. 439:

"The carriers have for four years been combatting this theory. Their contention is that the direction given the Commission by the valuation act is to report, not two figures but one figure, and that a cost figure. In other words, that the act directs the Commission to ascertain first the cost of reproduction new of the property, which is a *cost* figure, and then to ascertain the cost of reproducing it in its existing condition, which involves a consideration of how much less than new cost, if any, the property can be reproduced for because of the existence of depreciation, if any."

entirely possible that, in an entirely haphazard manner, the level of unimpaired savings embodied in the total plant may even have been increased, tho a state of working efficiency has been the ideal actually sought.[1]

It is recognized, moreover, that, when a large and varied plant, such as a railroad, is worn to a state of normal depreciation ("deterioration"), a formal depreciation reserve is not needed except for clearer exhibition of the facts.[2] Until formal insistence on the part of the Commission, against which vigorous protest was made by carrier representatives, depreciation reserves for equipment were rare indeed.[3] Bookkeeping was simplified by charging replacements to operating expense (maintenance) in preference to setting up a depreciation reserve, against which replacements should be charged. The effect of this confusing short cut has been to create, in the minds of some railroad men, the idea that they have a "right" to make needed replacements out of current earnings; that the entire cost of a new rail or car bought in 1915 is a part of the cost of producing transportation in 1915. As a matter of fact,

[1] See discussion at length, Railroad Valuation, pp. 108–124; and compare testimony of Mr. Kruttschnitt, Hearings, March, 1917, p. 314; of Mr. A. H. Plant, comptroller of the Southern Railway, ibid., p. 843. Mr. Plant said:

"Before the depreciation account was born, on the Southern Railway, we realized the necessity for taking care of our maintenance and retirements, and we really had in practice a depreciation not determined, however, as scientifically as subsequently determined by the Commission. When we retired a car on the Southern, we charged the cost to replace it with a *modern* car to operating expenses, and in that way we did practically what we are doing now under the Commission's depreciation rule. I was quite anxious after the rule was promulgated by the Commission, to see how the two methods agreed, and I went back and applied the Commission's rule to a period back of the time it was promulgated, and compared it with the results I obtained under the Southern's old method and it surprised me to find the results were very nearly the same."

[2] Railroad Valuation, pp. 109, 119; see the extended discussion by Messrs. A. A. Young, J. S. Davis, John Bauer, and J. C. Bonbright, "Depreciation and Rate Control," Quarterly Journal of Economics, vol. 28, p. 634; vol. 29, p. 362; and vol. 30, p. 546. The writer accepts the reasoning of Professor Davis. The concept of the "useless" depreciation reserve (useless because permanent) is referred to in the A., B. & A. Brief, p. 515.

[3] See, for example, three articles by William Mahl, Railroad Gazette, vol. 43, p. 413; Railway Age Gazette, vol. 48, pp. 440, 1249.

the cost of the old rail (not the cost of the new rail which represents new investment) was properly chargeable against the cost of producing transportation throughout its service life. The cost of the *new* rail is not significant for cost of past service. Practice omitted the formal credit to depreciation reserve, and, if attending to the detail at all, assumed that the amounts spent for maintenance and replacements balanced the accruing depreciation. But the fundamental reasoning reverts to the place in the whole productive process of machinery, of capital goods — of which the railroad, properly considered, is a typical illustration. The whole case is granted when it is acknowledged that "accrued deterioration necessarily exists in any well maintained railroad." [1] Railroad plant, half worn out, occupies the same economic position as the half worn pump and pipes of a water plant.[2] That portion of its cost properly assignable as cost of producing past services has been used up. The adequacy or inadequacy of past accounting methods are not in question, tho it is conceivable that they may raise ethical rather than economic questions.[3] But maintenance of investment is made in terms

[1] Texas Midland Brief, p. 399; see A., B. & A. Brief, p. 550.

[2] The following quotation from Mr. Brantley's Condition Per Cent, p. 14, seems to grant the whole case, when considered in terms of proper economic definition:

"It may well be that in the case of a large and expensive pump used by a water company, that a reserve fund should be accumulated with which to replace it when its service life, by reason of its inadequacy, is finally ended. It may well be also that long stretches of water mains laid at one time will have their service life expire at one time, and that the cost of replacing them, as in the case of the pump, would be greater than could be paid for as an ordinary operating expense. In such case it would be proper to have a depreciation reserve also, and in both these cases it might well be that on any given date, by reason of a recognized approaching day for a renewal, that neither of these properties could be given its cost new value. In the case of a railroad, however, its parts are being so constantly renewed, that it is found simpler and more practical to charge the cost of such renewals directly to operation. The vital thing in both cases is to continue the service and at the same time to preserve the value of the investment for service giving. If a continuous service is preserved, and can be indefinitely preserved by the railroad through its method of replacements, it follows that there is no loss of worth in its investment by reason of the age of its plant units." The answer to these assertions is simply that they are beside the point.

[3] Railroad Valuation, pp. 121, 122, and references there cited.

of dollars, not in terms of operating efficiency.[1] That Mr. Kruttschnitt, "as a maintenance man . . . would understand the statement that . . . (his) track was in 85 per cent condition to mean that there was 15 per cent there of neglected maintenance," simply establishes "railroad usage, custom, and practice."[2] It is useful for no other purpose, except as evidence of the inadequacy of that usage and practice when an appraisal of accrued depreciation is in process. The difficulty rests in an inability or unwillingness to recognize a differentiation of concept when the selfish interest can refer to an unscientific and loose phrase of professional speech. To show the economic facts is not to confiscate.[3] The Commission's conclusion is sound, however uncertain its reasoning.

IV. Land

The present value of land, as made final by the Commission, is based upon a conscious attempt to apply

[1] It is significant of the difference in point of view, as well as indicative of the ambiguity of the Supreme Court opinions that the following quotation from Knoxville v. Water Co., 212 U. S. 1, should have been cited by Mr. Brantley (who follows the citation with the argument that a condition of continued newness is impossible, and that, therefore, maintenance from earnings must mean replacements, which being made keep the investment unimpaired), and by the Commission. Texas Midland, 1 Val. Rep. 1, 49, where the Commission, satisfied to cite authority, including the Railway and Canal Commission of Great Britain, approved and adopted "the definition of depreciation applied by the bureau."

In the Knoxville case, the Supreme Court said:

"Before coming to the question of profit at all the company is entitled to earn a sufficient sum annually to provide not only for current repairs, but for making good the depreciation and replacing the parts of the property when they come to the end of their life. . . . It is entitled to see that from earnings the value of the property invested is kept unimpaired so that at the end of any given terms of years the original investment remains as it was at the beginning."

See also discussion of Mr. Brantley and Commissioner Hall, Hearings, September, 1915, pp. 41–46. Mr. Brantley, quoting Justice Hughes, in the Minnesota Rate cases, "It would seem to be inevitable that in many parts of the plant there should be depreciation, as, for example, in old structures and equipment on hand," sought to establish the rule, as a rule of the Supreme Court, that only accrued depreciation of old structures and equipment which he sought to identify with deferred maintenance, should be deducted. The argument was not duplicated in later discussion. All in all, Commissioner Hall's questions were pertinent and indicated an understanding of the real problem.

[2] Hearings, May, 1915, p. 73.

[3] Texas Midland, 1 Val. Rep. 1, 47–52; Kansas City Southern, 1 Val. Rep. 223, 258.

dicta expressed by Justice Hughes in the Minnesota Rate cases:

> Assuming that the company is entitled to a reasonable share in the general prosperity of the communities which it serves, and thus to attribute to its property an increase in value, still the increase so allowed . . . cannot extend beyond the fair average of the normal market value of land in the vicinity having a similar character.[1]

Justice Hughes really decided nothing when he used these words, for the conclusion is qualified by an assumption neither approved nor disapproved. This fact Mr. Prouty, and the Commission, following Mr. Prouty, have ignored. Where Mr. Prouty found authority for his assertion that "the decision explicitly holds . . . that either an increase or a decline in the value of land must be taken into account," or for his assertion that "while in the opinion of the court the carrier was entitled to the increase in the value of its lands like any other individual," is not indicated in his Memorandum.[2] If there is one thing that the opinion did not do, it was to reach any decision explicitly about land. It condemned what had been done; but it proposed no substitute program except that qualified by an assumption neither approved, disapproved, nor even discussed.[3] In terms of the assumption Justice Hughes set a maximum, which the Division of Valuation has reported

The assertion that the deduction of depreciation is "confiscation" appears frequently in Mr. Brantley's argument. A., B. & A. Brief, pp. 432–434; Hearings, May, 1915, p. 83; September, 1915, pp. 534; January, 1917, p. 168. At the Hearings, 1915, he said:

"Now to write out one half of the total cost of these ties estimated at $1.00 each, amounting to a billion and a quarter dollars — or, in other words, to deduct the accrued deterioration which exists in the ties, as I have defined it — would be to destroy half a billion dollars of value. . . . What I want to urge is that if you should write it out, it is equivalent to writing out a half a billion dollars of capital and dumping it into the Atlantic Ocean, because it is gone. It is gone forever." P. 83.

[1] 230 U. S. 352, 455.

[2] P. 55; see Texas Midland, 1 Val. Rep. 1, 53.

[3] Railroad Valuation, pp. 90–93; see argument of Mr. Max Thelen, Hearings, January, 1916, p. 144; and that of Mr. A. E. Helm, ibid., p. 41.

as present value without analysis of the underlying problem:

> Present value . . . is arrived at by ascertaining the number of acres of land owned or used by the carrier for its purposes as a common carrier and multiplying this acreage by a market value of similar and adjoining lands.[1]

The figure of present value so determined has been denominated by Mr. Farrell as "*a* present value, measured in *a* particular way" and not as "*the* present value."[2] No such fine line of distinction was drawn by the Commission. The figures reported as present value in the Tentative Valuations of the Texas Midland, the Winston-Salem Southbound and the Kansas City Southern were, as such, made final.[3]

The methods used in the federal appraisal have been adapted from the expedients developed in the previous state investigations. Mr. Prouty, who "really organized the system,"[4] simply took over the sales

[1] Prouty, Memorandum, p. 55.

Compare Mr. Maltbie, reporting for the Valuation Committee, the Nat'l Ass'n Ry. Com'rs, Hearings, May, 1915, p. 131: "Present value . . . should be determined from the value of similar adjacent lands;" likewise, the original draft of the act, Valuation of the Several Classes of Property of Common Carriers, Senate Report 1290, 62d Congress, 3d Session, which called for land values measured by the value of adjacent lands.

See the excerpt from Commissioner Daniels' dissent in the Kansas City Southern case, quoted below, note, p. 85.

[2] Hearings, March, 1917, p. 706, italics in the original; see discussion, Texas Midland Reply Brief, pp. 71–76.

Mr. Farrell also justified the refusal to allow the original clearing and grubbing on the ground that

". . . the more clearing done on the adjoining land, the greater the value of the adjoining land, and since the carrier gets the benefit of that improvement in the value placed upon the land included in its right of way, it gets paid in increased value of its right of way for the amount of grubbing it in fact did in the original construction, more than we allow for in reproduction." Hearings, December, 1917, p. 135.

The Commission ruled to the same effect, 1 Val. Rep. 1, 16.

[3] Such minor changes as were made in the tentative figures represented changes in details, not in principle. 1 Val. Rep. 1, 52–62, 199, 200, 258. But see Commissioner Daniels' dissent, Kansas City Southern, 1 Val. Rep. 223, 269.

[4] Hearings, March, 1917, p. 876. Mr. Prouty said: "I really organized the system which we use. I have been in the field. I know how the appraisal is done, and I still think I am right."

method, the sales assessment method, and the opinion method, and provided a coördinating and determining factor — the independent judgment of a civil service appointee (salary $2400–$3000 per year).[1]

Thus the actual figures assigned as value are opinion figures, just as the unit prices in Cost of Reproduction are opinion figures. The parallel in the problem is very real: just as the engineer must correlate specifications and prices, the land appraiser must correlate the quality of land and the values assigned. This has been done by dividing the railroad line into zones, the length of the zone depending upon the substantial similarity of the railroad right of way and the adjacent and adjoining land, and upon the assumed uniformity of the value of that adjacent and adjoining land. But the actual figure of value reported has been an opinion figure,[2] altho the fact that more often than not, perhaps, the appraiser has been a stranger in the community (he may even be a city real estate expert suddenly required to appraise farm lands), would seem to enforce great dependence upon the sales, sales assessment, and opinion investigation.[3]

In the Texas Midland case, the railroad alleged at length the weakness of the Commission's basic data.

[1] The investigation of sales includes the sales of adjoining and adjacent lands, and also sales anywhere in the country; and for the same year the assessed valuation is determined to fix upon the ratio. The opinions of loan agents, dealers, and owners of land, other than the owner of the property adjoining, are sought. The idea is to get representative opinion. See Kansas City Southern, 1 Val. Rep. 223, 259.

[2] Mr. E. W. Reed, the Commission's Senior Appraiser, described his method of fixing "values" as follows:

"I applied to the railway lands a valuation obtained from the valuation of property privately owned. My estimates were based on the value of abutting, contiguous similar land held in private ownership," quoted, Brief of Glenn Plumb for the Railroad Brotherhoods, p. 7.

The statement was made at the Texas Hearings, for which no printed proceedings were available.

[3] The appraisal of the Texas Midland lands was made by Senior Appraiser E. W. Reed of Nebraska; by Senior Appraiser A. O. St. John of Missouri; and by Land Attorney C. F. Newman of Missouri. "Neither was or ever had been a resident of Texas, nor had they any acquaintance, or occasion for acquaintance, with the lands in question before undertaking their appraisal." Texas Midland Brief, p. 910.

Indeed, bad faith, evidenced by the deletion of important parts of the testimony and the unfair use of citations, exaggeration, undue influence, were charged by both sides. The abilities and qualifications of appraisers were questioned. The memory of one Commission witness was declared to be "so poor that he did not remember the existence of the European war," etc. Another was so nearly blind that he could barely read a map, etc.[1] And the basic data were declared inadequate. Many recorded sales are paper transactions; the cheapest lands change hands most frequently;[2] forced sales, or sales for the settlement of an estate, may show low values;[3] or the consideration shown may be more than the real consideration in order that the securing of a loan may be facilitated.[4] Assessments on better lands are on a lower basis than upon cheaper lands;[5] non-residents are assessed more than residents.[6] Apprehension of the tax assessor is such that low opinions of value are given;[7] averages, rough and ready figures, rough approximations, "office valuations," result from opinions not made upon the ground.[8] But none of these objections to the data gathered to support the appraiser's judgment is conclusive, since, presumably, the weakness of the figures is taken into account when the value figure is independently derived.

To meet this claim, the Texas Midland attorneys sought to show that, in spite of protests to the contrary, the appraisers had actually used an average of the sales, assessment, and opinion figures. While it was possible to show a close correlation between the unit of value

[1] Texas Midland Reply Brief, pp. 99–109, 128–129, 161–166, 275; C. F. Newman, Land Brief, pp. 16–26, 45, 86, 90–95, etc.

[2] Texas Midland Brief, pp. 921, 936; Reply Brief, p. 169.

[3] Texas Midland Brief, pp. 923, 926, 927.

[4] Ibid., p. 933.

[5] Ibid., p. 941.

[6] Ibid., p. 941.

[7] Ibid., p. 949; at p. 972 it is stated: "It is a general custom in Texas to avoid taxation."

[8] Ibid., pp. 955, 967, 997–999.

fixed upon and a straight average of opinions, sales and assessment values, yet so long as the appraisers insisted that their own judgment governed the figure set, no exhibit, however patent the correlation, could suffice to overcome this assertion.[1] It can be said, however, that the following table reproduced from the Land Brief of Mr. C. F. Newman, the Commission's Land Attorney, to show the independent character of the appraisers' work, might as easily be cited to show that the appraisers based their figures sometimes on averages, sometimes on sales, and sometimes upon opinion:

Zone	Opinion	Kaufman County[2] (average values per acre)					
		Sales		Assessments		Straight average	Commission's unit of value
		Adjoining	Adjacent	Adjoining	Adjacent		
18	$30	...	$20	$45	$29½	$31.06	$30
19	98	...	...	66	78	80.66	90
20	40	...	...	...	...	40.00	40
21	44	$40	43½	33	1	40.12	42½
22	114	110	95	...	102	105.25	105
23	57	47	80	39	21	48.80	55
24	73	63	80	63	63	68.40	67½
25	323	414	1,387	...	480	651.00	330
26	91	...	...	90	60	80.33	90
27	60	75	65	65	...	66.25	65
28	68	68	...	55½	...	63.73	65
29	69	56	60	75	66	65.20	65
30	1,100	1,154	845	730	1,500	1,065.80	1,150
31	252	...	660	108	312	333.00	300
32	360	580	810	554	160	492.80	400
33	1,320	1,154	810	2,150	4,280	1,942.80	1,260
34	164	...	525	...	450	379.66	200
35	2,650	4,800	...	4,000	2,000	3,375.00	2,650
36	9,250	...	3,300	14,000	4,000	7,637.50	9,250
37	375	...	333	400	260	342.00	360
38	...	...	...	...	...	...	...
39	68	50	52½	63	...	58.37	60
40	56	34½	32	52	...	43.62	50

[1] See Texas Midland Reply Brief, p. 195 and following, for discussion in detail; also pp. 185, 186, 202.

[2] Land Brief of C. F. Newman, Texas Midland case, p. 23. At p. 22, Mr. Newman says,

"In some cases the averages do closely approximate the appraiser's units of value and there is no reason why that should not be true where there is a sufficient number of

A more fundamental objection was raised by the assertion that the Commission zones contained dissimilar land.[1] It would certainly be an exceptional county where land values remained the same along seven and a half miles of line. The values of farm and village land are determined upon different principles and zones which contained both included obviously dissimilar lands. Urban values, even in the town of a few thousand, vary within short distances; to bulk all such land in the same zone is to resort to a short cut.[2] Indeed it would seem that, when the appraisers acknowledged that the unit values assigned to certain zones represented weighted averages, the whole hypothesis was overturned.[3]

The carrier, in order to eliminate averaging, proposed to zone the line in agricultural country upon the basis of the ownership of the adjoining farms, and in towns to create separate zones "for one or two adjoining city blocks."[4] The result was greatly to increase the number of zones, and to exhibit a range of values within the

representative opinions, of representative sales and of representative assessments. In those cases, it is entirely proper that an appraiser, in arriving at his units of value should attach great weight to his record data."

But see Texas Midland Reply Brief, pp. 98, 187–201, and Mr. Newman's Reply Brief, p. 26.

[1] Texas Midland Brief, p. 989; Protest, N. O., T. & M., p. 38; E., J. & E., p. 38; Texas Midland, p. 32.

[2] Zone 47 was 7½ miles in length (Texas Midland Brief, pp. 981, 987, 988); zone 13, 5 miles; zone 15, 1½ miles; zone 41, 5½ miles, etc., ibid., p. 984 and following.

[3] Texas Midland Reply Brief, pp. 141, 142. The following is from the testimony of the government appraiser:

Mr. Craven: "In your opinion the same values existed in the property which adjoined that track."

Mr. Reed: "The fact of the matter is, the property in that zone was quite spotted, and in order to zone it with accuracy as to the exact value of the land, it would have been necessary to have cut it up into numerous short zones. In order to save the time, and there was no material difference except at small intervals, we concluded to put it in one zone and to fix the average value for that distance."

Mr. Craven: "How did you get at that average?"

Mr. Reed: "In a general way."

Mr. Craven: "Can't you tell me more specifically than that?"

Mr. Reed: "I cannot now." Texas Midland Brief, p. 992.

[4] Texas Midland Brief, p. 982; also pp. 867, 868.

zones established by the Commission's appraisers.[1] The "naked" land values were opinion figures fixed by committees of local men who "went upon each parcel and studied the peculiarities of each piece."[2] The object of this appraisal in terms of the value of individual adjacent farms was, however, to fix upon a "naked" land value, and to secure figures pertaining to imaginary consequential damages.[3] The testimony introduced at the general hearing of March, 1917, sought, by expert opinion backed up with detailed exhibits, to prove what, it would seem, no one was disposed to deny—that lands are not acquired by railroads "for the normal market value of the same area of naked land for general, not including railway, purposes of similar lands in the vicinity." This testimony sought also to establish "the further fact that the present cost of acquisition by condemnation or purchase of such lands is, and can be, determined with a reasonable degree of accuracy";[4] a thing which Mr. Prouty acknowledged was possible; "within certain limits."[5] The purpose of this testi-

[1] Texas Midland Brief, pp. 984–992; thus I. C. C. zone 47 (7½ miles) was subdivided by the carriers into 43 zones; and zone 17 into 31 zones, ibid., p. 868.

[2] Ibid., pp. 852, 864, 867–883, 982. The qualifications of the company appraisers are exhibited at length, ibid., pp. 852–861.

[3] The carrier's instructions to its appraisers defined "naked land value" as "value for general purposes, and does not include value for railway purposes, severance or other damages, improvements, or any other elements of value for which a carrier must also pay, nor does it include expense of acquisition." Ibid., p. 865.

[4] Ibid., pp. 891, 759. See testimony of Mr. Thomas W. Hulme, Real Estate Agent, Pennsylvania Railroad Company, Hearings, March, 1917, pp. 396–409, 443–453; of Mr. Joseph Beale, "for twenty-five years actively engaged in the purchase of right of way for the Pennsylvania" (Texas Midland Brief, p. 763), pp. 454–536; of Mr. F. M. Gilborough, Tax Commissioner, Missouri, Kansas & Texas Railway, ibid., pp. 536–565; of Mr. H. S. Marshall, Land Assistant, Presidents' Conference Committee, Western Group, pp. 582–622, 653; of Mr. W. R. Van Campen, Land Attorney, Eastern Group, pp. 622–646; of Mr. Charles Silliman, Engineer, Southern Group, pp. 646–653; of Mr. Pearce Horn, Superintendent, Real Estate, Southern Railway, pp. 654–658; of Mr. Charles E. Rice, Counsel, A., B. & A. Ry., pp. 658–770; and of Mr. Halford Erickson, formerly of the Wisconsin Commission, and later a practicing expert, pp. 670–702. Mr. Hulme's testimony is quoted in full, Texas Midland Brief, pp. 764–791. Mr. Erickson explained the Wisconsin Commission's use of a multiple, quoted, pp. 840–842.

[5] Hearings, March, 1917, p. 673; see also Prouty, Memorandum, p. 54. To the Commission, however, it seemed "clear" that "there is a marked difference between

mony was to establish that the hypothetical cost of reacquiring the railroad lands could be determined, preliminary to insisting that the present value of the railroad land be measured by this hypothetical cost of acquisition.

The carrier claim is consistent with the original attitude of the carriers as voiced in their Valuation Brief of 1915: " The present value of each piece of land used for transportation purposes must be determined upon the same principles which govern in condemnation of private property for public use." [1] To uphold this contention, resort is had to voluminous (and not obviously pertinent) quotations from those opinions in which the condemnation-regulation analogy was first assumed.[2] Without analysis of the real problem, the following conclusion is voiced:

> It is clearly settled . . . that the same constitutional provisions which protect private property from seizure for public use without just compensation safeguard it against confiscation by the enforcement of prescribed rates which are arbitrary and too low, and it necessarily follows that, unless the Commission shall make valuation upon a proper application of the same principles which govern in condemnation cases, the purpose of the Act will fail, and the findings of the Commission will not be admissible in evidence even in the classes of cases specified in the Act.[3]

And what are the principles governing the determination of land value in condemnation cases ?

(1) It is the general rule, accepted without question, in condemnation cases, that in determining the value of a strip of land, the

assuming in advance the total cost of acquisition, whether as the result of condemnation and damages paid or of purchase, in excess of the present value of similar lands in the vicinity, when no railroad has been constructed or is in operation, and the attempt to ascertain and state the cost of reproducing or reacquiring, at the present time, lands which actually have been severed from the adjacent property, have been converted into a railroad, and are being occupied by an operating rail carrier." 1 Val. Rep. 1, 54.

[1] Carrier Valuation Brief of 1915, p. 273; Texas Midland Brief, p. 194.

[2] Reagan v. Farmers' Loan and Trust Co., 154 U. S. 362; Ames v. Union Pacific, 64 Fed. 165; Smyth v. Ames, 169 U. S. 466; San Diego Land and Town Co. v. National City, 174 U. S. 739, etc. (quotations in Carrier Valuation Brief of 1915, pp. 276–297).

[3] Carrier Valuation Brief of 1915, p. 297; Hearings, May, 1915, p. 107.

present cost of acquisition of an equally suitable strip or tract of land in or through adjacent similar lands, is relevant to the determination of such value.[1]

(2) There is a well-established rule of law, which is uniformly applied in condemnation cases, to the effect that, if a tract of land has a peculiar adaptation for certain uses, this may be shown, and if such special adaptation adds to its value, the owner is entitled to the benefit of it.[2]

The appraisal submitted by the carrier was made for each county by a committee of three residents, "chosen with primary regard for their qualifications as citizens and judges of land values."[3] With "personal knowledge as a basis," the appraisers made a "thoro inspection" of the carrier property, a careful examination of every farm adjoining the railroad being necessary "for the analysis and determination of the extent to which that farm was damaged by the taking and use of the right of way for railroad purposes, and the loss of market value by reason of the existence of the railroad."[4] Damages classified as those due to severance and those due to the proximity of the carrier were accordingly assessed in detail. The result of this appraisal was to fix a naked land value of the lands classified by the Bureau as "owned and used for transportation purposes" (exclusive of the Delta County lands) amounting to $240,025.85; and to fix the damages as $57,906.22.[5]

[1] Hearings, May, 1915, p. 315; Texas Midland Brief, pp. 207, 891, citing (p. 209) Lewis, "Eminent Domain," section 706; p. 1227.

[2] Carrier Valuation Brief of 1915, p. 314; Texas Midland Brief, p. 101, 206, citing Lewis, section 707; Hearings, May, 1915, pp. 99–101; Notes and Comments, pp. 199–201; Protest, E., J. & E., pp. 13, 37; N. O., T. & M., p. 37.

[3] Texas Midland Brief, p. 852.

[4] Ibid., p. 858. The methods of the carrier appraisers are discussed in detail, C. F. Newman, Land Brief, p. 44 and following; Texas Midland Reply Brief, p. 118 and following.

[5] Ibid., p. 897. Damage due to severance was defined (ibid., p. 894) as "First, the damage resulting because of the inconvenience due to the separation of its parts, and, second, the loss due to the shape or size of the separated parts." Damages due to proximity of the railroad were there defined as those arising "by reason of the risks and annoyance incident to the operation of a railroad." The carrier appraisal of the Delta and Lamar County lands developed lower figures than those of the Commission. The Delta County figures were never placed in evidence by the carrier. Texas Midland Reply Brief, pp. 86, 301.

But it was the figure of naked land value, and not the figure including hypothetical damages, which furnished the basis for the figures finally claimed by the carrier.[1] The " present value " claimed was calculated by using a multiple or factor of 2.23, and adding to this amount 6 per cent to cover expense of acquisition. The basis of this claim was the general exhibit introduced by Mr. H. S. Marshall, land assistant of the Western Carrier Group at the March, 1917, hearing. Mr. Marshall, using 152 reports from western roads, which showed the cost of acquisition of right of way for 3929.76 miles of line, derived a multiple of 2.62 (the purchase price divided by the naked land value — $8,941,231.58 divided by $3,411,813.75). The expense of acquiring this land was $577,886.05, or 6.16 per cent of the total price. This study served to demonstrate, at least in a general way, " from the actual experience of these carriers the relationship between the naked land value and the total cost of acquisition." [2] In order to have particular figures, " careful study was made for the purpose of determining the present cost of acquisition of the railroad lands . . . under the peculiar conditions of soil, topography, and community and rural development." [3] This study was made by Mr. E. Holbrook, of the Southern Pacific, who brought to this study " long experience with the problem," and by Mr. William Malone, a Houston real estate dealer, who having acted as real estate agent for the Trinity and Brazos Valley could derive figures which were " the results of a careful study

[1] Except for the amounts claimed for the land occupied by industry tracks, areas in streets, and land alleged to have been omitted. Texas Midland Reply Brief, p. 898.

[2] Texas Midland Brief, pp. 898, 899. See Hearings, March, 1917, p. 582 and following, and especially the Exhibit at p. 616. It was recognized that, while many of the lines contributing to this exhibit were similar to the Texas Midland, many were dissimilar. A study of the purely Texas lines gave a multiple of 2.05, which was a logical expectation, since the greater part of these lines was located in the plains country of West Texas.

[3] Texas Midland Brief, p. 900.

of a practical man, in the light of practical experience in the territory of the Texas Midland." Both gentlemen testified that the cost of acquisition could not be accurately estimated by individual parcels, both falling back on the multiple short cut — that of Mr. Malone (2.23) being adopted " in the interest of conservatism," rather than that of Mr. Holbrook (2.25).[1]

This " uncontradicted testimony " was then alleged to establish that naked land value of adjacent and adjoining land is much less than the present value of the lands, rights of way and terminals of the carrier. It is obvious that the " uncontradicted testimony " did nothing of the kind, until it proved in addition that the present value of the lands is measured by the hypothetical cost of acquisition under present conditions. The evidence perhaps did show that naked land value is too low to be used as a measure of " present cost," but it certainly did not " demonstrate that naked land value . . . is too low to be used as a *measure* of the present value or present cost of acquisition of the carrier land."[2]

[1] Texas Midland Brief, pp. 904, 907. These multiples are the " weighted averages " of county multiples established by the two experts. See also Notes and Comments, p. 205. The actual work done is described by the Commission in the following terms:

" Two men were selected who had no special knowledge of lands along this railroad, who were stationed upon the rear end of a passenger coach, and provided with a map showing the parcels as they were originally acquired. The train proceeded at its ordinary rate over the length of the line. From this inspection these gentlemen undertook to state parcel by parcel the excess cost of acquisition and the damages. A computation showed that less than one minute could have been devoted by them to the inspection and determination of these excess costs and damages as to each parcel. The proposition that the Commission could make a report under any such method as this is too fantastic for serious discussion." 1 Val. Rep. 1, 109.

The method is described in greater detail by Mr. Elmquist of the Minnesota Commission, Hearing, December, 1918, p. 96.

On the other hand, the carriers " seriously urged that no man can appraise property in substantial country by riding through them in a day coach and by consulting the census of 1910, and the soil survey of the Department of Agriculture." Texas Midland Reply Brief, p. 92. It is probable that the demonstration of the extent of the actual examination by the government appraisers (for example, it was shown that the examination had in part been done from a regular passenger train and that at small towns the train had not been stopped, on the theory that the land values would be the same, ibid., pp. 268, 304) led to the stricter instructions described in the Texas Midland opinion, pp. 167, 168.

[2] Texas Midland Brief, pp. 908, 909; also Hearings, May, 1915, pp. 1112, 1113.

To this discussion can now be brought words expressed by Justice Hughes in terms of a general principle:

> The railroad has long been established; to it have been linked the activities of agriculture, industry and trade. Communities have long been dependent upon its service, and their growth and development have been conditioned upon the facilities it has provided. The uses of property in the communities which it serves are to a large degree determined by it. The values of property along its line largely depend upon its existence. It is an integral part of the communal life. The assumption of its non-existence, and at the same time that the values that rest upon it remain unchanged is impossible and cannot be entertained. . . .
>
> The Company would certainly have no ground of complaint if it were allowed a value for these lands equal to the fair average market value of similar land in the vicinity, without additions by the use of multipliers, or otherwise, to cover hypothetical outlays.[1]

The comment of the Texas Midland attorneys upon these words is, in substance, that other language in the opinion upholds, if properly interpreted, the contention that figures produced by their method constitute admissible evidence of land value, since they conform with condemnation procedure, and secondly that the method condemned by the Supreme Court was a different method from that used by the Texas Midland appraisers.[2]

The second contention can be briefly disposed of, since it represents no appeal to principle. It asserts that, since the base figures to which the Minnesota multiple was applied was not the "naked land value," but included a "speculative increment" and imaginary costs incurred to overcome imaginary difficulties, the objection voiced by Justice Hughes cannot be applied to an appraisal based upon "naked land value."[3] But Justice Hughes' language was in general terms: "The

[1] Minnesota Rate cases, 230 U. S. 352, 452, 455. See the discussion, in detail, Railroad Valuation, pp. 85–93, 153–159, where the inadequacy of the "fair average market value" test is demonstrated.

[2] Texas Midland Brief, p. 218.

[3] Ibid., pp. 218–227.

conditions of ownership of the property and the amounts which would have to be paid in acquiring the right of way, supposing the railroad to be removed, are wholly beyond reach of any process of rational determination." [1] And the fact remains too, that it is equally difficult to see how even the measure proposed by Justice Hughes as a maximum — " assuming that the railroad is entitled . . . to attribute to its property an increase in value, . . . the fair average of the normal market value of land in the vicinity having a similar character " — eliminates " conjecture." [2] Looking at the problem in terms of general reasoning (and not in terms of legal strategy) it seems clear that the appraisal introduced by the Texas Midland is, in its essential premises, identical with that condemned on logical grounds by Justice Hughes.[3]

Better authority can be secured from the Minnesota opinion for the first contention of the carrier attorneys: that portions of the opinion by " manifest implication " and "necessary implication" indicate that the rule for the ascertainment of compensation in condemnation cases would have been approved.[4] Elsewhere the difficulty of harmonizing Justice Hughes' conclusion in this portion of his opinion with the cases which he cites and explains in his argument has been indicated.[5] The attorneys for the Texas Midland attempt to establish such harmony:

> The phrase " the fair average of the normal market value of the land in the vicinity having a similar character," and the phrase " the fair average market value of similar land " mean the same thing, to

[1] 230 U. S. 352, 452.

[2] See Railroad Valuation, pp. 90-93 for a critical analysis of this portion of Justice Hughes' opinion.

[3] See Texas Midland, 1 Val. Rep. 1, 60.

[4] Texas Midland Brief, pp. 223 and 228. The same reasoning and phraseology is found in Mr. Butler's argument, Hearings, May, 1915, pp. 108-115.

[5] Railroad Valuation, p. 155.

wit: the amount which the owners would be entitled to receive therefor, in case of acquisition by condemnation of a right of way out of such similar lands.[1]

The difficulty arises from the fact that Justice Hughes, having disposed of the carrier contention on one basis, went back to demonstrate that, even upon the hypothesis proposed by the carrier, the figures presented were not acceptable. Making the supposition which he had so vigorously condemned — that the railroad had been obliterated, and that its lands were in the hands of others — he stated the rule that the owner would be entitled to receive, through condemnation proceedings, "its fair market value for all its available uses and purposes," an "element to be considered" being "any peculiar or special adaptation for railroad purposes."[2] Yet "the owner would not be entitled to demand payment of the amount which the property might be deemed worth to the company, or of an enhanced value by virtue of the purpose for which it was taken; or of an increase over its fair market value, by reason of any added value supposed to result from its combination with tracts acquired from others so as to make it a part of a continuous railroad right of way held in one ownership."[3] But the carrier attorneys, resort-

[1] Brief, pp. 223, 244. At p. 226 it had been asserted: "It is clear that the phrase 'its fair market value' . . . and 'the fair average' . . . mean the price which the company would legally be required to pay in condemnation proceedings." Surely this is to assume and not to prove a conclusion. At p. 228 less certain language is used: "The present cost of acquisition — ascertained according to the principles which govern in condemnation of private property for public use — of such right of way, or of an equivalent right of way, is certainly a relevant fact, and good evidence of present value."

See also the extended discussion by Mr. Brantley, Hearings, January, 1917, pp. 240–248. Mr. Brantley's argument is substantially the same as that here outlined from the Texas Midland Brief.

[2] Minnesota Rate cases, 230 U. S. 352, 451, citing U. S. v. Chandler-Dunbar Water Power Co., 229 U. S. 53; Mississippi, etc. Boom Co. v. Patterson, 98 U. S. 403; Shoemaker v. U. S., 147 U. S. 282; Boston Chamber of Commerce v. Boston, 217 U. S. 189.

Mr. Butler, Hearings, May, 1915, p. 111, makes the point that the Hughes opinion is "not written in the best of order."

[3] 230 U. S. 352, 451; see Hearings, May, 1915, p. 100 (Mr. Butler).

Justice Hughes, commenting upon the evidence presented, in relation to the basis for determination of land value for condemnation said: "There is no evidence before us

ing again to "implication" and "knowledge," next assert:

> Fair market value for all its available uses and purposes, arrived at by giving due consideration to peculiar value and special adaptation for *railroad purposes*, is known by all to be greater than the market value of similar adjacent lands for agricultural and other like purposes. Therefore, the language of the court . . . "the fair average of the normal market value of land in the vicinity having a similar character," means what the railroad company would now have to pay in condemnation proceedings, under the rule stated in this opinion, to acquire the right of way land if it were held by others.[1]

The basis for this conclusion (which seems an obvious *non sequitur*) is the "well recognized fact" that the acreage value of the similar lands through which a right of way extends, is "as a rule," less than the acreage value of the right of way.[2] This is to assume the conclusion, not to prove it.

The Commission approaches a recognition of the claim set forth in these terms by the assertion that "due allowance" is accorded "any special value which may attach by reason of the peculiar adaptability of the land to railroad use."[3] But since, presumably, the figures reported and approved were based solely upon the value

from which the amount which would be properly allowable in such condemnation proceedings can be ascertained." P. 452. Mr. Brantley uses this comment to justify the assertion that the Court approved cost of condemnation as value. Hearings, January, 1917, p. 244.

[1] Texas Midland Brief, p. 229; Hearings, May, 1915, pp. 112, 114. Yet it is asserted, Texas Midland Brief, p. 231: "In value of its whole right of way, the carrier is entitled to have included all elements of value existing at the time of appraisal, including value due to shape, continuity, and profitable use. Therefore, present cost of acquisition, arrived at upon the principles which are applied in condemnation, may be, and frequently will be, less than present value."

[2] Ibid., p. 232. It had previously been stated that "*Value*, at date of acquisition, may be greater than *cost*, because of a combination of many tracts to make a continuous right of way held in one ownership." Ibid. But see also Hearings, May, 1915, p. 113, to the effect that what it costs to buy at time of purchase constitutes "value."

[3] Texas Midland, 1 Val. Rep. 1, 3, 53, 167. This holding is from Prouty, Memorandum, p. 49.

of adjacent tracts, this " due allowance " is more nominal than real.[1]

Quite aside from the question of the premises, stated or assumed, the carrier reasoning, which is based solely upon appeal to authority, presents an entire failure (or unwillingness) to recognize that at no place does Justice Hughes state an affirmative rule. His proposed adjacent land test is premised upon an assumption which he neither rejected nor affirmed, while his discussion in terms of condemnation precedents is specifically conditioned by a premise which elsewhere is vigorously rejected. The truth would seem to be that Justice Hughes (following the example of Justice Harlan in Smyth *v.* Ames) discussed phases of the problem, and decided nothing except in terms of disapproval.[2] An analysis in terms of economic principles must have resulted in the rejection of the condemnation analogy. But the facts did not demand such analysis.

There is an essential difference between the results obtained by the proposed carrier test and those obtained by the Commission's method. Using the value of adjacent tracts and a multiple, it will be exceptional indeed when the " value " claimed will not exceed the amount originally paid by the railroad. And this probability

[1] See, moreover, the discussion of the " railway value " of land, Railroad Valuation, pp. 156, 157; also Texas Midland, 1 Val. Rep. 1, 57–59. That " railway value " is not a clean cut concept is readily apparent: it has been defined in terms of a " value " which is based upon a multiple, and in terms of adaptation for railroad purposes. It is in the latter sense that the phrase is used in Railroad Valuation; in the former sense (and to the writer's mind, a less satisfactory sense) by the Commission in the Texas Midland opinion (p. 57). The phrase is used in both meanings in the Minnesota Rate cases, 230 U. S. 352, 451–455.

[2] Railroad Valuation, p. 17.

In the Winston-Salem Southbound case where the tentative valuation based " the present value of lands upon the normal fair value of similar lands in the vicinity, ascertained in the manner employed and stated in the Texas Midland case," the Bureau and the carrier agreed on the present value, and the carrier's protest was waived, tho this waiver did not extend to the claims as to the ascertainment of reproduction cost or present cost of acquisition.

increases with the passage of years. Even with the Commission's method only the most recent projects may normally be expected to show a "present value" below actual cost. The increase in the value of both urban and rural lands has been such that only where a carrier has been forced to buy into an already valuable area, and to pay a price based, amongst other things, upon the presence or proximity of another railroad, has the cost exceeded what the Commission reports as "present value." But for these recent projects, and for some portions of even the older projects, it can be shown that the amounts reported as "present value" are actually less than was paid by the carrier. The notable illustrations occur where terminals have been bought in cities, as when the A., B. & A. secured the lands needed in Birmingham and Atlanta;[1] but even the Texas Midland could show areas which had cost more than the Commission's "present value."[2] To meet this situation Mr. Prouty proposed another concept: "reasonable value," original cost being "stated as present value, not because original cost is present value, but because under the circumstances it would be the best evidence of such reasonable value" — provided "the value of these lands had not declined since the date of their acquisition, . . . they were acquired with reasonable prudence, and . . . no unusual or abnormal condition appeared."[3] The Commission did not follow this

[1] Thus the Birmingham terminals, costing the road $1,300,000 were "valued" at $900,000. A., B. & A. Brief, pp. 589, 730; Hearings, March, 1917, p. 668. "Specific examples" to show instances where cost exceeded "present value" are cited in the A., B. & A. Protest, p. 47; cost of $39,992, present value of $3,843; $40,658, $20,775; $13,350, $3,936. See also Kansas City Southern Protest, p. 46.

[2] Texas Midland Brief, p. 881, a table showing "numerous instances, where, despite the great increase in land values during recent years, the 'present value' . . . is less than the carrier paid." P. 879.

[3] Prouty, Memorandum, p. 55. See Hearings, December, 1917, p. 164. Mr. Prouty's reference is here doubtless to the Minnesota Rate cases:

"It is clear that in ascertaining the present value we are not limited to the consideration of the amount of the actual investment. If that has been reckless or improvident,

recommendation of Mr. Prouty, which is, after all, an attempt to introduce equitable considerations in the private interest.[1] Perhaps it was enough that, in the face of the instances cited by the carrier, a present value of $254,479.98 was reported for lands which had cost $67,493.44, of which only $22,884.69 had actually been contributed by the carrier, lands valued at $44,608.75 having been donated.[2] Taking the railroad site as a whole, the method of measurement adopted showed an increase in the value of lands which exceeded any extra costs at the time of original acquisition.

But is not cost, rather than "value" based upon hypothesis, the really important figure? The railroad is a highly specialized case of "capital sunk in the soil." Only a small part of the railroad plant can be devoted to another use, or to the same use in another place. The

losses may be sustained which the community does not underwrite. As the company may not be protected in its actual investment, if the value of its property be plainly less, so the making of a just return for the use of the property involves the recognition of its fair value if it be more than its cost. The property is held in private ownership and it is that property and not the original cost of it, of which the owner may not be deprived, without due process of law." 230 U. S. 352, 454. See discussion, Railroad Valuation, p. 124 and following, and especially pp. 128, 129.

[1] The same difficulty caused Commissioner Daniels to write as follows in his Kansas City Southern dissent:

"Evidence before us shows clearly that where a railway is first projected through a new region, the land is often acquired at a nominal cost, whereas when a carrier is well established and a region is fairly populous, the costs to the carrier of the later-acquired lands whether through purchase or condemnation are likely to exceed the normal value of lands adjacent.

"I raise these queries as to the method employed to ascertain land values in order to indicate my fear that a rigid formula may be applied where a more rational method would modify the formula where justifying circumstances exist. A chance dictum may easily harden into a formula, and a formula into a fetish, if the matter is not lifted into a plane of rational procedure. It was in the Minnesota Rate cases that it is said, p. 355: 'There is no formula for the ascertainment of the fair value of property used for the convenience of the public, but there must be a reasonable judgment, having its basis in a proper consideration of all relevant facts.'

"In what is said above in criticism of what appears to me an unduly inflexible method of estimating land values, I am not to be understood as challenging the propriety of the Commission's specific land estimates in the present case and still less as subscribing to the exaggerated figures sought by the carrier for its Kansas City lands. But I am anxious to reserve scope for 'a reasonable judgment having its basis in a proper consideration of all relevant facts.'" 1 Val. Rep. 223, 269.

[2] Texas Midland, 1 Val. Rep. 1, 77.

railroad site is withdrawn from actual or potential agricultural, residence or business use. A considerable fixed investment has been made once for all in grading a suitable roadbed, and providing the necessary permanent structures. Once this investment has been made, the roadbed and site are substantially identified; and whether the investment in the long run shall prove warranted depends, not on the cost of producing the structure, but upon demand: the volume of traffic and the level of rates maintained. The return is a "quasi-rent." [1] Once the net earnings extend beyond the point which furnished the inducement to the original investors an element of "unearned increment" appears in earnings, comparable to the "unearned increment" accruing in the rent of sites devoted to other than railroad purposes.[2] But this "unearned increment" can only be measured in terms of cost.[3]

The difficulty with most of the reasoning upon this subject is that an increase in the value of land is assumed to be "natural;" the relationship between the unearned increment in the rent of lands, and the unearned increment in land value which is the result and not a cause of the unearned increment in earnings, is not understood. Since the valuation test is a test proposed to measure earnings, attempt has been made to secure a basis independent of earnings. So, assuming that the railroad is entitled to the unearned increment — which

[1] See Marshall, Principles of Economics, pp. 74, 412, 425, 426.

[2] See the discussion in Railroad Valuation, pp. 201–205; also A., B. & A. Brief, p. 468. At a meeting of the Railway Real Estate Association, Mr. James P. Nelson, of the Chesapeake & Ohio summarized the position held by railroad land in the following terms:

"Our right of way is not for sale as land at any price unless we abandon the use of the right of way and then at once it may become utterly valueless. We have destroyed its value for every other purpose, except as railroad purpose, that purpose gone, the value has gone. . . . If we cease to use the land as right of way, then, unless it has fitness for some other purpose, it has lost the breath of life." Railway Age Gazette, vol. 61, p. 702.

[3] Railroad Valuation, pp. 124–131.

is really the underlying problem [1] — it has been proposed to measure the value of the railroad site in terms of the value of lands devoted to dissimilar use, and in truth a value dependent upon the presence of the railroad. There is no essential difference (except in degree) between the Commission's "adjacent land" test, and the carrier's "adjacent land and multiple" test in this respect. Both are unsound.[2]

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[1] Railroad Valuation, pp. 204, 205.

Mr. LaFollette said in the Senate:

"The primary purpose in establishing the values separately I shall state very frankly. It is to put into the possession of the Commission and upon record the data which will enable us ultimately to try out the question and determine the right of the railroads to capitalize the unearned increment." 49 Congressional Record, 3800.

[2] Railroad Valuation, pp. 90–93, 124–131; see discussion by Mr. Butler, May, 1915, p. 107; by Mr. Hulme, p. 122; also Hearings, March, 1917, p. 566, where the presence of a congested colored district is supposed to add "value" to the yards of the Kansas City Southern at Port Arthur.

[Parts V, VI, VII, treating respectively the subject of Cost, Intangibles, and Final Value, will appear in the next following issue.]

BRITISH INDUSTRY AND THE AMERICAN EMBARGO

SUMMARY

The Embargo a weapon of offense, 88. — Times favored the trial, 89. — Hardships inflicted on British labor, 91. — An incentive to smuggling, 94. — Stagnation gives way to revival in other trade routes, 95. — Cotton a test of the Embargo, 97. — Linen, 101. — Effect of Embargo on British food supply, 102; and consequent ban upon distilleries, 103. — Tables of imports and exports, with comments, 106. — Foreign exchange, 110. — Estimates of loss, 111. — Conclusion and general observations, 112.

WHEN in December, 1807, Congress voted the embargo, recalled our ships and forbade them to leave port, it forged a two-edged weapon. Its ostensible purpose was protective. The Berlin Decree and the Orders in Council made neutral sailing precarious. The Milan Decree, soon to be published, made it well-nigh impossible. Prudence demanded the recall of our shipping before it fell into French or British hands. And as a prudential measure, the embargo met with little opposition; even in New England, where it was soon to drive men to the brink of secession. As a measure of caution, however, its limitations were obvious. The losses from ships at anchor, docks abandoned, and sailors dispersed, might soon equal the risks of enemy capture. In face of economic disaster, the embargo could be justified only as a weapon of offense, and this latter object came, as time wore on, to be more fully recognized.

Strangely enough, the efficiency of the embargo as a weapon of offense has received little attention. Its political and economic reactions on America have been

studied, but these concern its defensive aspect. The real clue to the success of the embargo as a substitute for war lies overseas. How did it affect the nations against which it was aimed? France one may dismiss with a word. The British blockade needed no embargo to aid its operations against Napoleon. But for Great Britain the situation is more complex. True, the embargo did not secure the concessions which it sought. Nevertheless, it exerted a decided pressure upon industrial life in Great Britain. And the measure of British distress is, accordingly, one measure of American political wisdom in 1808. On the other hand, to ascribe all the misfortunes of British industry in 1808 to American causes would be fallacious. The Berlin and Milan Decrees were in operation throughout the year, and the former of these was already producing an effect[1] before the Non-Intercourse law was revived by America, and the embargo enacted.[2]

British trade gave signs of disorder as early as August, 1807.[3] Nor did conditions improve as autumn advanced. Writing in October, Lord Auckland, an opponent of the government's policies, draws a lugubrious picture of commerce in decay: "I am told by the best Custom house and mercantile authorities that our exports are almost totally suspended, and that our imports are gradually contracting; that orders for manufactures are revoking; and that not only our European trade is checked, but that the demand of goods for the United

[1] It may be added that this effect long outlasted the repeal of the embargo. See A. Andréadès, History of the Bank of England, p. xviii.

[2] Thomas Tooke, A History of Prices and of the State of Circulation from 1793 to 1837, vol. i, p. 290, attributes the distresses of the time to the combined effects of French and American enactments.

[3] William Smart, Economic Annals of the Nineteenth Century, vol. i, p. 155. See also "The Speech of James Stephen, Esq., in the Debate in the House of Commons, March 6, 1809, on Mr. Whitbread's Motion, Relative to the Late Overtures of the American Government, with Supplementary Remarks on the Recent Orders in Council," pp. 11, 28, 32, 56.

States is interrupted. If this account should be in any degree accurate, it will soon affect not only the customs, but the excise, and will also be followed by much individual distress." [1] Some weeks later, in the same vein, he predicts that unless prosperity revives before spring, the manufacturing towns will be clamoring for peace.[2] And when the Orders in Council were published, he renewed his laments.[3] In fact, the more he reflects upon the Orders, the more disastrous they appear. Quoting French authority, he foresees that the rupture of commerce must automatically create or stimulate manufactures among former customers of Great Britain,[4] while those at home confronted nothing but depression, with distress in Yorkshire,[5] and general discontent among manufacturers and importers.[6]

Since opposition thrives best on discontent, Lord Auckland, as a party man, may have been less melancholy than the picture he paints. Certainly he and his associates set themselves cheerfully to the task of gleaning party advantage from complaints of merchants [7] and the petitions of malcontents.[8] But discounting exaggerations and the limited perspective of merchants, manufacturers, and noblemen of the opposition, it still

[1] Hist. MSS. Comm. Fortescue MSS., p. 140, October 16, 1807. Lord Auckland to Lord Grenville.

[2] Ibid., p. 143, November 6, 1807. Lord Auckland to Lord Grenville.

[3] Ibid., p. 147, November 17, 1807. "My private belief is that, so far as our manufacturers are interested, the whole of this measure will operate to diminish still further the diminished export; and that, so far as our West Indian embarrassments are concerned, they must be aggravated by a system which tends to lessen the consumption and to increase the accumulation of foreign sugars."

[4] Hist. MSS. Comm. Fortescue MSS., p. 153, November 28, 1807. "The *Moniteur* of the 25th September, 1806, says, 'La prohibition des marchandises étrangères de cotes que vient d' ordonner le Gouvernement ne contribuera pas peu à nous faire obtenir le resultat si désirable de fabriquer nous memes la totalité des articles dont nous avons besoin." Also ibid., p. 279, February 15, 1809.

[5] Hist. MSS. Comm. Fortescue MSS., p. 155, December 5, 1807.

[6] Ibid., p. 158, December 9, 1807.

[7] Ibid., p. 181, March 1–6, 1808.

[8] Ibid., p. 182, March 14, 1808.

appears that the industrial situation at the close of 1807 offered a fair trial to the embargo. And debates in Parliament, articles in the reviews, and private correspondence alike testify to the reality of its pressure.

All these sources indicate that centers of manufactures and commerce were first to feel the embargo.[1] The critical period came with the turning of the year. Protests arose from Manchester, Liverpool, and London.[2] And in the March debates, Parliament was reminded of the cries of distress on all sides, and regaled with a vision of Liverpool once more a village, its glory departed.[3] No time was lost in conveying to America reports of unparalleled distress in the manufacturing districts.[4] America was told that many laborers at one time accustomed to a guinea a week were now reduced to sweeping the streets or begging their bread.[5] These accounts were probably exaggerated to meet the taste of their hearers, since wages — at least, nominal wages — had been rising for the past six years,[6] and for artisans, at any rate, approached their maximum in 1808.[7] But discounting partisan exaggeration and propaganda, the condition of British labor in the face of a present shortage of the harvest, and a prospective shortage of the raw materials for industry, was far from enviable. Its protests, nevertheless, went unheeded. When the shipping and commercial classes even welcomed the withdrawal of the last great neutral from competition, the miseries of a disfranchised and inarticulate proletariat could not be expected to sway the policy of the

[1] Hansard's Parliamentary Debates, 1st Ser., vol. x, March 8, 1808.

[2] Journals of the House of Commons, vol. 63, p. 400 (b) and 417 (a).

[3] Ibid., p. 957.

[4] Frankfort, Ky., Palladium, June 23, 1808, quoting the Richmond Enquirer. London News of March 20.

[5] Ibid., London, March 23.

[6] William Smart, Economic Annals of the Nineteenth Century, vol. i, p. 182.

[7] Thomas Tooke, A History of Prices and of the State of Circulation from 1793 to 1837, vol. i, p. 288.

cabinet. Giant petitions from the manufacturing centers against enforcing the Orders in Council [1] accordingly served no real purpose other than to bolster American morale. New Yorkers learned in July of riots in old Yorkshire in which 10,000 weavers cursed the price of bread and demanded higher wages, refusing to disperse until several hundred of their number lay dead in the streets.[2] Sixty thousand looms were said to be idle. Tho later reports pointed to some improvement and some pay increases, discontent was slow to subside,[3] and ceased to be a factor only when political developments in Spain brought new energy and hope to the entire industrial life of the nation.[4]

The intensity of suffering in the crowded centers throughout the winter of 1807 and 1808 finds testimony more convincing than such rumors and hasty observations as made their way to America, in the statistics of the poor rate. This in Manchester rose in the embargo year from an average of £4,000 to no less than £49,000.[5] And the government gave official recognition to the state of the country by a pledge to distinguish the victims of want from mere trouble brewers "in any measures which the excesses of the misguided may compel us to take." [6] It is unnecessary to claim for the embargo the sole sponsorship for all this wretchedness, in order to maintain that it was a factor with which the British system had distinctly to reckon.

[1] Frankfort, Ky., Palladium, May 19, 1808. "Extract from a letter of an American gentleman in London to the Editors of the Boston Chronicle, dated March 12, 1808."

[2] Ibid., August 25, 1808. "Latest from England. From the New York Gazette, July 29."

[3] Frankfort, Ky., Palladium, September 1, 1808, quoting England, June 9.

[4] William Smart, Economic Annals of the Nineteenth Century, says, "It is significant of the new hope that the petitions for peace from the manufacturing towns, where there was considerable distress, at once came to an end. After May [1808] England had again a large seaboard open to her commerce."

[5] Hansard's Parliamentary Debates, 1st Ser., vol. xii, p. 1170.

[6] "Speeches of the Rt. Hon. George Canning," vol. ii, pp. 360, 361, June 24, 1808.

The growth of misery and discontent was hastened by industrial concentration and the failure to diversify industry. This was as apparent in the colonies as in the mother country. Specialization in industry accounted for the economic sensitiveness of Lancashire.[1] Specialization in agriculture was responsible for a similar sensitiveness in the West Indies. Both British and French, these islands were surrendered to the growth of sugar. The entire economic life of the colonies centered in a maximum production of one staple, and starvation impended whenever food imports were threatened. The embargo menaced chiefly the French West Indies because British sea power cut off normal communication from France. And it was believed that they must surrender to Great Britain, or starve.[2] But the prospect of having more islands to feed was a doubtful blessing. The requirements of feeding her own impelled Britain to a royal proclamation [3] exempting from interruption neutral carriers of lumber and provisions bound for the colonies in the West Indies or South America, even where the absence of clearance papers indicated a defiance of the embargo.

This official bid to American lawlessness was followed by an act of Parliament opening the door to that free trade between America and the West Indies which was not to come in its fullness until Van Buren's time. For the present, the route was to be circuitous. A free importation of rice, grain, and flour was invited direct "from any Foreign Colonies on the Continent of *America*," [4] Florida, of course, was meant. But the

[1] Hist. MSS. Comm. Fortescue MSS., p. 252, December 28, 1808. Lord Auckland to Lord Grenville.

[2] Bell's Weekly Messenger, quoted in the Frankfort, Ky., Palladium, April 29, 1808.

[3] Dated Windsor, April 11, 1808. See Am. State Papers, "For. Rel." vol. iii, p. 281.

[4] Journals of the House of Commons, vol. 63, p. 466 (b), June 17, 1808. See p. 464 for royal assent, June 23, 1808.

United States were privileged to send goods "into the British Provinces in *North America*" for reëxport to the islands.

Such allurements did double service. They opened ports to needed goods, and rallied American renegades to a violation of their country's laws. Among these, Aaron Burr appears in a character rôle. The peregrinations of Burr had brought him in 1808 to Nova Scotia, and his name was associated with an especially alluring bait for New Englanders chafing under commercial fetters. The items listed by official proclamation as welcome in the ports of Nova Scotia are at any rate worthy of Burr's capacity as a tempter — "staves, plank and square timber, boards and scantling, bread, biscuit, flour, peas, beans, wheat, barley, oats, Indian corn, grain, seeds, and meal of all kinds; also tobacco, pitch, tar, turpentine, salted beef and pork, bacon, hog's lard, butter, onions, fruit, etc., from the United States of America and from the Azores, or western islands." [1]

Commercial inducements like those offered in the West Indies and Nova Scotia proceeded of course from no friendly motive. But with the data at hand, it is not easy to determine which of two arguments prevailed, the pinch of necessity, or a will to undermine American solidarity. Doubtless it was both. The needs of the West Indies were real. And New England restiveness was well known. Whatever the object, the opportunity of British colonial trade was a distinct concession to the embargo.

The necessity of such a concession was less apparent in the summer than in the early spring of 1808, because events which no one could foresee when the embargo was laid had shaped themselves toward its defeat. These centered about the Spanish struggle for liberty. Great

[1] Frankfort, Ky., Palladium, August 4, 1808, quoting from the Aurora.

Britain, as the champion of Spanish freedom, was the heir to Spanish commerce.[1] And the possibilities of an El Dorado combined with existing high prices, due to a threatened curtailment of needed supplies,[2] to create a furor of speculation. Credit was greatly expanded.[3] And a huge exportation of goods created the appearance of an economic revival not warranted by the character of the trade, which was highly speculative. Brazil participated in this commercial boom, and a traveler in Rio Janeiro recorded at the time " that more Manchester goods were sent out in the course of a few weeks than had been consumed in the twenty years preceding; and the quantity of English goods of all sorts poured into the city was so very great that warehouses could not be provided sufficient to contain them; and that the most valuable merchandise was actually exposed for weeks on the beach to the weather, and to every sort of depredation. Elegant services of cut glass and china were offered to persons whose most splendid drinking vessels consisted of a horn, or the shell of a cocoanut; tools were sent out, having a hammer on the one side and a hatchet on the other, as if the inhabitants had had nothing more to do than to break the first stone that they met with, and then cut the gold and diamonds from it; and some speculators actually went so far as to send out *skates* to Rio Janeiro." [4]

This sudden activity in new markets communicated itself to the more stabilized routes of commerce. The Baltic, Heligoland, and Malta enjoyed a vast increase in trade, an extension which, according to Tooke, " was

[1] A. Andréadès, History of the Bank of England, p. 219.

[2] Thomas Tooke, A History of Prices and the State of Circulation from 1793 to 1837, vol. i, p. 292.

[3] A. Andréadès, History of the Bank of England, p. 219.

[4] Thomas Tooke, A History of Prices and the State of Circulation from 1793 to 1837, vol. i, p. 276. Quoting M'Culloch, Principles of Political Economy, 2d ed., p. 329.

probably greater and more sudden within the two years, viz., 1808 and 1809, . . . than had ever before been witnessed, within a similar period." [1]

Home industry also felt the ferment, and new enterprises were launched in excess of actual requirements. The public was invited to subscribe for shares in numerous breweries, distilleries, "fire offices," bridges, and canals.[2] In sum, there was, in the sober language of Thomas Tooke, "a great briskness in the general circulation; a rapidity in the interchange between goods and money or credit, which is an invariable attendant on speculative periods." [3]

That the embargo contributed to this era of speculation cannot be doubted. It shared with Napoleon's decrees direct responsibility for a reign of high prices,[4] in view of the fears which Britons entertained that imports could not be relied upon to replace their deficient grain harvest, and to meet the requirements of manufactures. It furnished, at the same time, an added incentive to utilize the new Spanish opportunities as an offset for lost markets, and even aided the process by withdrawing from all competition. In this way, the embargo created its own Frankenstein. Its supposed victims balanced their gains with their losses, and discovered at least an imaginary credit. The table of British exports for 1808 shows a loss of £6,604,774 over the 1807 trade to the United States, and a gain of £6,-152,448 over the 1807 trade to "America, exclusive of the United States." [5] Increased trade with Canada

[1] Thomas Tooke, Thoughts and Details of the High and Low Prices of the Last Thirty Years, vol. i, p. 101.

[2] Thomas Tooke, A History of Prices and of the State of Circulation from 1793 to 1837, vol. i, p. 277.

[3] Thomas Tooke, Thoughts and Details on the High and Low Prices of the Last Thirty Years, Pt. I, p. 103.

[4] Ibid., Pt. I, pp. 99, 100.

[5] G. R. Porter, The Progress of the Nation, ed. by F. W. Hirst, 1912, p. 479.

with a view to reëxport to the United States doubtless accounted for a part of this. But the opening of South America manifestly absorbed a large share.

On the whole, however, it would appear that the commercial gains from the embargo were fictitious.[1] The South American trade was not a real substitute for the loss of Great Britain's best customer. Yet it came at the psychological moment to stiffen resistance to Napoleon and Jefferson. A better index of the effectiveness of the embargo is afforded by manufactures, especially of cotton, the most characteristic development of that industrial revolution on which British power was founded. Cotton had been singled out for the most odious provision of the Orders in Council, the nine pence a pound reëxport tax, and in cotton, America might enjoy her most soul-satisfying retaliation. To achieve this, however, she must exercise patience, inasmuch as the British trade faced the crisis with a considerable surplus.[2] Moreover, in the event of its long continuance, fresh supplies were anticipated from Turkey, by land conveyance through Germany,[3] an interesting survival of a mediaeval trade route. Better still, there was a genuine shortage in France which would cripple a growing industry.[4] And sound British policy would discourage any cotton export to fill the gap.[5] The government even made capital of the well intrenched position of the cotton trade, boasting that there were more merchants in favor of than opposed to the Orders in Council.[6] The mustard seed of truth in this Utopia was the rise in raw cotton which necessarily accompanied the cessation of supplies. Dealers and manufacturers

[1] One evidence of this is the increase of bankruptcies. The number rose from 1362 in 1807 to 1433 in 1808, and declined in 1809 to 1382. Thomas Tooke, Thoughts and Details on the High and Low Prices of the Last Thirty Years, Pt. I, p. 219.

[2] Hansard's Parliamentary Debates, 1st Ser., vol. x, p. 1346, April 8, 1808.

[3] Ibid., p. 1347.

[4] Ibid., p. 1349.

[5] Ibid., p. 1347.

[6] Ibid., p. 1349.

who were well stocked would naturally support any measure which enhanced prices.[1] Those who now clapped loudest would be the first to groan when the pinch was real.

If cotton was the real test of the embargo, its solution would depend not upon a few rich speculators, but upon the prosperity of the rank and file. Here the government boast did not long remain uncontradicted. Lord Grenville, a leader of the opposition forces in Parliament, twitted the optimists with their failure to bring forward witnesses in support of Liverpool trade and Manchester manufactures and the activity of the shipping industry. Free trade, he declared, was the true solution of the cotton manufacture, of raw material for which British harbors would always insure a supply.[2]

For reasons inherent in the entire industrial and political conditions of America, the most effective enforcement of the embargo was in the southern states. Hence cotton shipments, even discounting a certain leakage by the Amelia Island route, were really small.[3] The consequence was a rapid inroad upon the British surplus of 1807, with a correspondingly enhanced respect for the embargo.[4] By September, the initial supply was mostly consumed, and the expectation of Brazilian and other sources demonstrated to be an illusion. Notwithstanding these adversities, Britons confided in American avarice to break the deadlock. "This country has always considered the Americans so com-

[1] For a biting satire upon this complacency, see the Edinburgh Review, vol. xiv, p. 445, July, 1809.

[2] Hansard's Parliamentary Debates, 1st Ser., vol. x, pp. 1349–1351, April 8, 1808.

[3] Thomas Tooke, Thoughts and Details on the High and Low Prices of the Last Thirty Years, Pt. I, p. 105, gives cotton imports into Great Britain as bales:

1807 — 282,667, 1808 — 168,138, 1809 — 440,382.

[4] Frankfort, Ky., Palladium, November 17, 1808, quoting Philadelphia, October 27, an "Extract of a letter from an intelligent American gentleman in London to his friend in this city, dated September 17."

mercial and so avaricious that the people, when two crops are on hand, would force their government to permit the exportation of it on any terms." [1] But American docility under losses, a surprise to the British, premised, if persisted in, "a fair arrangement by the next Spring." [2]

The diminishing cotton supply was reflected in price changes of moment, proportioned to supply and demand. The accompanying tables are, accordingly, complementary:

TABLE OF IMPORTS OF UNITED STATES COTTON INTO LIVERPOOL, 1806–14 [3]

	Bags		Bags
1806.....	100,273	1811.....	97,626
1807.....	143,756	1812.....	79,528
1808.....	25,426	1813.....	18,640
1809.....	130,581	1814.....	40,448
1810.....	199,220		

AVERAGE ANNUAL COTTON QUOTATIONS FOR THE SAME PERIOD [4]

	Uplands (chiefly American) d. per lb.	Surats (East Indian) d. per lb.
1806.....	18¼	14½
1807.....	14½	13
1808.....	22	19½
1809.....	20	18½
1810.....	15½	15
1811.....	12½	12
1812.....	16¾	14
1813.....	23	17½
1814.....	29½	21

[1] Frankfort, Ky., Palladium, November 17, 1808, quoting Philadelphia, October 27, an "Extract of a letter from an intelligent American gentleman in London to his friend in this city, dated September 17."

[2] Ibid.

[3] Am. Hist. Review, vol. xxi, No. 2, January, 1916. Article by G. W. Daniels, "Cotton Trade under the Embargo," p. 278. Another estimate of cotton imports into Liverpool gives higher totals, but leaves a similar conclusion. See Hist. MSS. Comm. Fortescue MSS., p. 261, January 6, 1809. Lord Auckland to Lord Grenville, "It appears by an account which I received yesterday from Liverpool that the total import of cotton wool into Great Britain for 1807, was 282,448; 1808, was 168,138, of which from the United States in 1807 was 171,023; 1808, was 37,672." Thomas Tooke, Thoughts and Details, etc., Pt. I, p. 105, gives it 168,138 bales, but as a great falling off.

[4] Thomas Ellison, The Cotton Trade of Great Britain, p. 245.

The importation for 1808 exceeded that of 1813 by only a few thousand bags, and is interesting testimony to the comparative efficiency of commercial embargoes and naval wars. The price of 22*d.* quoted in 1808 is a 50 per cent rise over 1807, and even this is given only as an average. It was a clear case, too, of the effect of the embargo as distinct from the decrees of Napoleon, for British power kept open the sea lanes, and insured the arrival of such cotton as came on to the world market.

Speculation ran wild, and in October cotton touched three shillings, and even three shillings two pence a pound.[1] Manufacturers disposed to keep open their mills were at the mercy of bulls in raw materials and bears in finished products, the market for the latter being overstocked.[2] And over the whole unhealthy structure impended a veritable sword of Damocles, the ever present possibility that the embargo might be removed. Bad now for the entrepreneurs; worse then for the speculators.

Conditions for the workingmen were equally distracting. Tho their budgets were less imposing, their problem was not less baffling. They were assigned to the well known fourth dimension formula: "How can half the wages pay twice the prices?" Despairing of a solution, they humbly informed Parliament that they "are brought to great distress by the reduction of their wages, and that they do not obtain, upon a fair average, more than one half the wages for their labour, which they were paid in the year 1792, although since that period, the charges for food, house-rent, firing, and other articles, are nearly doubled, and daily on the increase."[3] To relieve this sad condition, Parliament

[1] "Extract of a letter, dated Liverpool, October 3," given in the Frankfort, Ky., Palladium, for January 12, 1809.

[2] Ibid.

[3] Journals of the House of Commons, vol. 64, p. 95 (a), February 24, 1809.

was urged to fix a higher wage rate for cotton weaving.[1] Tension in the cotton industry diminished with the increasing importations during 1809, and business approached its norm.[2]

In the linen industry, conditions were more favorable, and Ireland, its headquarters, seems to have enjoyed a prosperity comparable with that which the Great War just terminated has brought her. A contemporary chart shows progress even in the year of embargo.[3]

Year	Yards exported
1805	42,988,621
1806	43,534,971
1807	39,049,727
1808	40,901,442
1809	43,904,382

It is scarcely a measure, however, of embargo efficiency. As regards linen, America possessed no such complete monopoly of raw material as in the case of cotton. The local supply was nevertheless inadequate,[4] and "a more general cultivation of flax and hemp was urged."[5] Holders of linen, like those of cotton, enjoyed a sudden rise in values. Indeed, the prosperity in the industry was attributed in part to "the scarcity of flaxseed arising from the embargo, and in part to the exportation of German linens having been checked."[6] The course of linen, however, exhibited a further difference from that of cotton in that for the latter curtailed supplies meant speculative profits but industrial un-

[1] Journals of the House of Commons, vol. 64, p. 95 (b), February 27, 1809, gives a similar petition from Scotland.

[2] Am. Hist. Review, vol. xxi, No. 2, p. 280, January, 1916. Article by G. W. Daniels. "Cotton Trade under the Embargo."

[3] Quarterly Review, vol. i, p. 427, May, 1809. "An account of the quantity of linen cloth exported from Ireland, from the 25th of March, 1776, to the 5th of January, 1809, inclusive."

[4] Ibid., p. 428. "America, Riga, and the Low Countries furnished flax seed."

[5] Quarterly Review, vol. i, p. 427.

[6] Edinburgh Review, July, 1809, vol. xiv, pp. 445, 446. The article is a satire on the supposed prosperity of Irish linens.

rest; while with the former, it was otherwise. The profits arose, but not their unpleasant corollary. Does not the American monopoly of cotton suggest the explanation? Ireland used our flax, but could buy elsewhere; England used our cotton, and could buy little elsewhere.

The British food situation under the embargo is not easy to determine. Population estimates vary from 11,769,725 to 17,444,911.[1] Privation for the lower estimate would mean starvation for the higher. The annual importation of wheat for the ten-year average, 1801–10, was reckoned at 600,946 quarters,[2] of which the United States furnished the principal quota. To what extent would the deprivation of this inconvenience the population? Very little, if we accept "a very small fraction above a peck"[3] as the annual import per capita. And this might be more than offset by increased production at home. Land enclosures were progressing at a rapid rate, and the area under cultivation increased by 7,350,577 acres during the reign of George III.[4] Of these, 1,550,010 are credited to the period 1800–09, and in the one year 1808 ninety-two bills of enclosure became law.[5] Altogether one would expect Great Britain at this early date to be almost self-sufficing. It is something of a surprise, therefore, to meet with earnest and repeated solicitations to Parliament to stop the whiskey business lest the country be brought to starvation.

[1] See G. R. Porter, The Progress of the Nation, ed. by F. W. Hirst, 1912, pp. 176, 177. For a third estimate at sixteen and one half millions, see Annals of Congress, Tenth Congress, Second Session, p. 877. The lowest estimate best accords with William Smart, Economic Annals of the Nineteenth Century, vol. i, p. 138 — who gives 8,870,000 for the year 1803.

[2] For a larger estimate, see Journals of the House of Commons, vol. 63, p. 386 (a), May 31, 1808 — 770,000 quarters.

[3] G. R. Porter, The Progress of the Nation, ed. by F. W. Hirst, 1912, p. 177.

[4] Ibid., p. 188.

[5] Thomas Tooke, Thoughts and Details on the High and Low Prices of the Last Thirty Years, Pt. III, p. 129.

There was, nevertheless, sufficient ground to apprehend a food shortage, the more so in view of the difficulty of covering it by importations [1] from either the Continent or America. The crop of 1807 left no surplus to tide over the wretched harvest of 1808, which was ruined by phenomenal heat followed by wet, stormy weather.[2] And if widespread destitution was to be avoided, restrictions upon the distilleries were only a matter of reasonable caution.[3]

Western Scotland was especially urgent in pointing to restrictions upon distilleries as the one sure relief from distress.[4] Parliament was reminded that Paisley and the neighboring towns of Renfrew depended upon outside supplies the greater part of the year.[5] Similar petitions from Dumbarton and Kilmarnock alleged that grain prices were rising unconsciously from a scarcity of oats and barley, "so that unless the consumption by Distillation ceases for a limited time, the most alarming consequences are to be apprehended." [6]

Temperance was not permitted to cloud the issue, because in the joint interest of British distillers and West India planters, energy released from grain and malt liquors was to be transferred to rum.[7] The chief opposition to grain economy came, therefore, not from the powerful brewing and distillery barons, but from the

[1] Thomas Tooke, Thoughts and Details of the High and Low Prices of the Last Thirty Years, Pt. III, p. 181. To cite the case of wheat and flour only, exports increased from 24,365 quarters in 1807 to 77,567 in 1808, while imports fell from 400,759 quarters to 81,466.

[2] Ibid., Pt. III, p. 68. Also ibid., Pt. I, p. 105.

[3] Ibid., Pt. I, p. 216, and Pt. III, p. 177.

[4] Thomas Tooke, A History of Prices and of the State of Circulation from 1793 to 1837, vol. i, p. 267, shows that the 1807 wheat crop was poorer in Scotland than in England or Wales.

[5] Journals of the House of Commons, vol. 63, p. 386, May 31, 1808.

[6] Ibid., vol. 63, p. 418 (b), June 10, 1808, from Dumbarton; and ibid., p. 394.

[7] Ibid., vol. 63, p. 394 (b), June 1, 1808. See also Thomas Tooke, Thoughts and Details, etc., Pt. III, p. 68.

landed interest.[1] The quarrel lay between town mouse and country mouse. And the squires brought forth the rather ingenious sophistry that wasteful consumption was the surest stimulus to adequate production. They trembled for their country when they thought of "the dangerous effect which this measure must have in discouraging the growth of corn; being likewise fully convinced that the best resource against a future scarcity consists in encouraging the distillation of corn."[2]

Wiseacres beheld in the grain restrictions a return to the type of government interference which the philosophy of Adam Smith was supposed to have discredited once and for all. They rose to denounce this flagrant violation of *laissez-faire*. Their argument was simple: If the price of grain rose so little as not to prevent the distiller from using it, there was evidently a very slight degree of scarcity. The moment when the interest of the country required a stoppage of the corn distillery, and the moment when the distillers' own interest would have stopped it, must coincide very nearly.[3] They condemned as "vague and gratuitous" the assertion that barley was dear, defying any one to know when it was really so. "The price has advanced no doubt; but if the supply is contracted, ought it not to advance?"[4] They admitted that the worst consequences of government action would not develop because confidence in the power of landowners to repeal the law would encourage farmers to their usual planting.

Permanently to exclude grain from the distilleries would breed disaster, because its production would diminish by precisely, or perhaps even more than, the 470,-

[1] Edinburgh Review, vol. xiii, p. 399, January, 1809.

[2] Journals of the House of Commons, vol. 63, p. 407 (a), from petitions submitted by Lincolnshire and Essex.

[3] Edinburgh Review, vol. xiii, p. 398, January, 1809.

[4] Ibid.

000 quarters hitherto consumed in spirits.[1] And at this point in the argument, China came forward as the horrible example. With naïve disingenuousness, Britain's prosperity was attributed to her luxuries; China's indigence to her short allowance. "The project of substituting sugar for grain in our distilleries is calculated to bring us nearer short allowance — nearer the wretched situation of the Chinese than we hitherto have been, by a quantity equal to the maintenance of 300,000 or 400,000 persons. . . . Hitherto a bad crop might prove inconvenient — henceforth it may be fatal." [2]

While the *Edinburgh Review* was fulminating against this sacrilege to *laissez-faire*, its more youthful rival [3] defended a regulation which inflicted no injury upon British farmers, yet saved the West India planters from ruin.[4] The government itself took the broad view. Tho committed to the Orders in Council, it was not blind to their consequences in curtailed supplies of food. It had the good sense to heed the petitions of consumers, and the restrictions advocated finally became law.

When one reflects that the food shortage of 1808 compelled a measure which all the submarines in the great war just ended did not effect, one feels a new respect for an embargo which, in conjunction with Napoleon's measures on the Continent, could diminish British corn, grain, and meal imports from £920,435 in 1807 to £146,119 in 1808,[5] and over the protests of the landed gentry, compel distillers to reorganize the "trade."

[1] Edinburgh Review, vol. xiii, p. 399.

[2] Ibid., p. 400.

[3] Quarterly Review, vol. ii, pp. 14–18, August, 1809. Delay of the article afforded the advantage of a better perspective.

[4] Edinburgh Review, vol. xii, p. 95, shows that the relief of the West Indies was short-lived.

[5] Journals of the House of Commons, vol. 64, Appendix A1, p. 548. This reduction would seem due almost entirely to the embargo, Napoleon's Berlin Decree having been enforced during much of 1807.

TABLE OF IMPORTS INTO GREAT BRITAIN FROM THE UNITED STATES FOR THE YEARS ENDING JANUARY 5[1]

Article	1807		1808		1809	
	Total	Real Value	Total	Real Value	Total	Real Value
Annotto	£41,277	£71,353	£40,259	£64,402	£4,554	£6,913
Ashes, Pearl and pot	89,726	138,498	94,045	144,326	26,822	38,344
Cochineal	62,253	77,817	7,283	9,104	.....	.....
Coffee	29,012	25,904	67,191	66,636	124,671	111,313
Corn, grain and meal	233,585	422,429	468,744	922,308	32,855	64,200
Hides	5,708	12,406	9,164	18,590	1,255	2,868
Indigo	6,616	47,297	8,917	69,909	1,564	12,515
Pitch and tar	27,892	34,378	32,729	40,266	9,638	11,792
Seeds, flax and linseed	12,205	11,590	6,759	7,050	1,815	3,139
Skins and furs	32,146	65,062	13,568	26,116	5,565	10,434
Sugar	37,526	51,173	9,555	13,030	74,277	101,218
Tobacco	224,813	417,946	240,224	447,883	62,770	118,261
Turpentine	66,322	100,822	51,308	77,638	14,811	23,349
Wood, deals and fir timber	9,146	64,758	21,962	131,741	4,056	24,534
Wood, mahogany	16,024	29,432	41,512	81,482	2,181	5,306
Wood, masts	12,282	10,121	6,514	5,355	583	466
Wood, staves	59,761	139,203	62,912	146,734	9,377	21,696
Wool, cotton	984,373	2,566,729	1,565,788	4,115,136	425,999	1,144,414
Other articles	49,217	73,825	99,088	143,704	33,737	57,224
Totals	£1,999,884	£4,360,743	£2,847,522	£6,531,410	£836,480	£1,751,986

[1] Journals of the House of Commons, vol. 64, p. 648. Appendix.

TABLE OF EXPORTS FROM GREAT BRITAIN TO THE UNITED STATES FOR THE YEARS ENDING JANUARY 5[1]

Article	1807		1808		1809	
	Total	Real value	Total	Real value	Total	Real value
Brass and copper manufacture	£40,632	£82,142	£84,441	£168,004	£32,947	£69,968
Cotton and linen manufactures and cotton yarn	4,072,840	4,934,783	4,049,209	4,916,032	2,477,819	2,825,564
Glass and earthenware	60,248	175,526	49,733	162,542	11,811	61,850
Haberdashery	21,535	313,764	20,446	310,862	2,851	69,620
Hats	58,305	99,260	39,934	64,620	840	1,851
Iron and steel manufactures	302,681	684,678	325,028	773,188	86,895	220,620
Lead	12,945	44,619	9,390	31,166	8,837	36,661
Salt	84,689	88,989	85,660	89,874	35,460	37,233
Silk manufactures	133,430	425,165	122,144	417,418	885	3,723
Tin and pewter	58,827	79,189	54,650	75,875	40,661	53,916
Woolens	2,949,816	4,866,178	2,509,322	4,239,118	1,139,563	1,642,709
Other articles	483,972	595,195	393,272	597,814	94,963	218,024
British total	£8,279,720	£12,389,488	£7,743,229	£11,846,513	£3,933,532	£5,241,739
Foreign mdse	333,402	476,063	177,891	251,429	58,527	61,127
Total	£8,613,122	£12,865,551	£7,921,120	£12,097,942	£3,992,059	£5,302,866

[1] Journals of the House of Commons, vol. 64, p. 648. Appendix.

Cotton and foodstuffs were not the only hostages detained in America for British good behavior. And the following tables show beyond peradventure the pinch in Britain, and the self-restraint of America.

As previously indicated, however, this serious loss in the export trade to America was largely compensated for elsewhere, as the following table shows: [1]

Year	Exports to Europe	Exports to Africa	Exports to Asia	Exports to U.S.A.	Exports to America, exclusive of U.S.A.	Total
1806	£11,363,635	£1,163,744	£2,937,895	£12,389,488	£10,877,968	£38,732,730
1807	9,002,237	765,468	3,359,226	11,846,513	10,439,423	35,412,867
1808	9,016,033	633,125	3,524,823	5,241,739	16,591,871	35,007,501

The table of imports, representing a decline of £4,779,424 (real value) in the year of embargo, is impressive testimony to the determination of the American executive. But gains in other directions enabled the British customs to close the year with a net loss of imports, from Europe, Africa, and America, of only £1,668,633.[2] This slight effect upon British total imports, amounting to less than 7 per cent all told, really explains the failure of the embargo. Couple this with a net loss of only £405,276 in exports out of a total trade amounting to more than £35,000,000, and the stability of British commerce is evident. It is not easy to see how even a total cessation of American exports, an ideal never attainable in a fallen and smuggling world,[3] could have

[1] G. R. Porter, The Progress of the Nation, ed. by F. W. Hirst, 1912, p. 479.

[2] Journals of the House of Commons, vol. 64, p. 549, and p. 64, for a more general chart of imports from Europe, Africa, and America. The totals for the years 1807, 1808, and 1809 were £25,089,136, £25,453,149, and £23,784,516 respectively. For an interesting chart of timber imports, see G. R. Porter, The Progress of the Nation, ed. by F. W. Hirst, 1912, p. 425.

[3] Hist. MSS. Comm. Fortescue MSS. N. Vansittart to Lord Auckland, enclosure in a letter to Lord Grenville of June 24, p. 207. "He [Irving] afterwards mentioned that for some weeks past, trade had begun to be more brisk than it had been; and that in particular very large shipments were making to America by old and established houses. He however, believed they cleared out for Nova Scotia, and not for the United States; which circumstance confirms what we have seen in the American papers respecting the great smuggling in the Bay of Fundy." See also the Life and Correspondence of Rufus King, vol. v, p. 144, for the same idea.

achieved its object. American products were needed. They were essential to the orderly progress and expansion of British industry. Their absence worked hardship in various industries, and raised the price of food to the toiler. Yet Great Britain somehow "carried on." Even the fresh resources of a new continent could not assure to America monopoly control against a power whose flag sailed every sea.[1]

The embargo was, however, a two-edged sword, and if the thrust was slightly weak, the parry proved the master. Vast speculations in South America and huge smuggling operations in Canada but ill concealed the fact that American isolation barred Great Britain from her richest export market, and upset the balance of trade in a manner disconcerting. Goods, British and Irish, to the value of £12,389,488 entered America in 1806. A slight falling off was apparent in the following year. But in 1808 the exports shrunk to $5,241,739, appalling tribute to the embargo as an engine of commercial wrath. Nor was the recovery to £7,258,500 in 1809 wholly satisfying,[2] not least among the embarrassments of the period being the dislocation of foreign exchange, a condition for which the embargo, if not wholly, was at least partially responsible.

American commerce had long been the mainstay of British foreign exchange. Under normal conditions, the direct American trade supplied Great Britain with cotton, lumber, flax, and tobacco. But America was still

[1] Hist. MSS. Comm. Fortescue MSS., p. 223. Lord Auckland to Lord Grenville, October 10, 1808. "The East and West India importations have certainly been very great; but the warehouses are filled to the brim, and the duties, therefore, are not received."

[2] G. R. Porter, The Progress of the Nation, ed. by F. W. Hirst, 1912, p. 479. But see Journals of the House of Commons, vol. 64, Appendix A, p. 648, for totals of 1807, £12,865,551; 1808, £12,097,942; 1809, £5,302,866; and Hist. MSS. Comm. Fortescue MSS., February 15, 1809, p. 279, where loss of exports is given as £6,000,000.

Imports, 1,551,000.

£7,551,000.

more important as a market, and the balance of trade was high in favor of Great Britain. The contrary was true on the Continent. It, too, looked to America for raw materials and staples, but had never secured the American market in turn. The reasons for this are well known. Colonial America had been a British trade monopoly, and ignorance of the importance of the market, unfamiliarity with American tastes and demands, and preoccupation with a political turmoil ever since 1789, had debarred Continental Europe from any real American foothold. The consequences of this for the balance of trade and foreign exchange were that Great Britain, with a margin of sales to America, drew for payment upon American debtors on the Continent, adjusting the balance by only a slight transfer of gold. To disturb this balance would mean the outward movement of gold. Precisely this happened, and at a time of unprecedented financial stress, the operations of the exchequer were hampered by a rise in gold from a normal of 80*s.* an ounce in 1807 to 91*s.* in 1809; 97*s.* 6*d.* in 1811; 105*s.* in 1812; and 110*s.* in 1813.[1] So serious a rise in the price of gold exercised of necessity a disturbing influence upon wage and commodity prices, and brought home to the working man, indirectly it may be admitted, the evils of the embargo, and of the abnormal commercial relations which succeeded it.

The export and import tables cited in this article were officially printed, and common property. Nor was their significance ignored. A modern statistician estimates that from 1805 to 1807 inclusive, America absorbed nearly one third of British exports.[2] A trade of such magnitude interested the entire nation, and its peril furnished ammunition to the leaders of the opposi-

[1] G. R. Porter, The Progress of the Nation, ed. by F. W. Hirst, 1912, p. 499.

[2] Ibid., p. 497.

tion, eager to " convince his majesty's ministers of the ruinous tendency " of the Orders in Council.[1] Individual quarters were compared unfavorably with those of the year preceding;[2] reduced imports were traced to their source in the Orders in Council;[3] and diminishing exports, bad tho their showing, were declared to be short of the whole truth, since Ireland and Scotland were omitted — " giving them, therefore, a proportionate share, the diminution of our commerce may fairly be estimated at £14,000,000." [4] By the opposition, at any rate, most evils of the day were attributed to the Orders, such responsibility for them as belonged to the Decrees being ignored. Nor was it sufficiently consoling that America suffered also,[5] tho the vulgar might find amusement in figure juggling as to the $48,000,000 supposed American damage.[6]

With estimates of loss running as high as £14,000,000, it is apparent that the pressure of the embargo was serious. Indeed, in the view of some, only a series of fortuitous circumstances averted an actual catastrophe. " We allude to the opening of Spain and Portugal, and our military expeditions in these countries — the struggle made by Sweden, and the increased communication with Brazil and Spanish America — not to mention the fact that the year which gives this amount of loss comprehends the period when shipments were made on both sides, before the operation of the embargo, and when hazards were run by neutral adventurers, upon the presumption that neither of the regulations would

[1] Hansard's Parliamentary Debates, 1st Ser., vol. xi, p. 708, May 30, 1808. See also Hist. MSS. Comm. Fortescue MSS., p. 302, April 14, 1809.

[2] Ibid., p. 707, May 30, 1808.

[3] Ibid., p. 1129, July 1, 1808.

[4] Ibid., 1st. Ser., vol. xi, p. 780, February 17, 1809. See also Edinburgh Review, vol. xiv, p. 450, July, 1809.

[5] Ibid., p. 708.

[6] Annual Register, 1808, pp. 85, 86, quoting from a New York paper.

be enforced as they actually were. Had it not been for these circumstances, our loss of trade in consequence of the Orders would probably have been more than double what it actually was; and this boasted cure for our commercial embarrassments would, in all probability, have reduced our whole foreign trade to a little wretched smuggling in Europe and America." [1]

Thus British testimony bears witness to the hardships imposed by the embargo. The demoralization of the cotton industry and the desperate measures to conserve the food supply are themselves sufficient proof that the embargo menaced the entire economic balance. Yet the embargo wholly failed in its political purpose. The Orders in Council, against which it was aimed, remained in force. How near it came to achieving its end can never be known. The precise degree of economic pressure equal to conquering a proud people defies calculation; and the ability of any single nation to impose that pressure upon the mistress of the seas might well be doubted. Certainly no nation should have anticipated results so gigantic within one year, and the embargo expired in March, 1809. Tho conditions in England warranted a continuation of the experiment, America lacked resolution to pursue it further.

Many factors contributed to this, not least of which was the psychological. The embargo was too negative. The British blockade of Europe was, in contrast, positive. Britain's clutch upon Napoleon was not a mere refusal to ship goods to his coast. It was the will and the power to prevent others from doing so, either. America in the nature of things was unprepared to take similar action against Great Britain. Limited to a passive rôle, she played it with tolerable efficiency, but gave it too brief a trial. Britain's more active blockade

[1] Edinburgh Review, vol. xiv, p. 450, July, 1809.

required five years to produce results. These came at length with the general uprising of a starving Europe. The "Battle of the Nations" testified to the groaning of the poeples under an economic yoke almost as galling as Napoleon's open tyranny.

Moreover, the British blockade of Europe was openly belligerent. It enlisted the good will of the nation in a fight for existence. For this, no sacrifice would be too great. For America, the contrary held true. Self-denial is heroic, but undramatic. To ruin oneself might starve the enemy, but his injuries were to be imagined; one's own were real. America played blindfold, and the game lacked spirit. Besides, there were none of the prizes of aggressive action, no growing merchant marine to warm the dried veins of rich old merchants, no naval heroes "of Baltic and of Nile" to stir the pulse of youth.

It is pleasant to turn from the more sordid aspects of Orders and embargo to the virtues they called forth. On either side, the really noteworthy feature of the embargo is its spiritual contribution. The dogged resolution of England, firm to endure all things, even unto the end; the idealism of America, willing to follow Jefferson in a grand experiment for securing the honor and dignity of his country without the blood cost of war, shine from out the mistakes and miseries of the times as two Anglo-Saxon traits of enduring greatness.

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A DIVISION AMONG THEORISTS IN THEIR ANALYSIS OF PROFITS

SUMMARY

The classical economists regarded minimum profits as an element in cost of production, 115. — Walker's rent theory, 118. — Similar views by other Americans, 119. — By Europeans, 121. — Profits regarded as wages of labor by still others, 123. — Distinction needed between earned efficiency profits and unearned scarcity profits, 127. — Efficiency profits recognized by the law, 128. — Patents, trade secrets, invention, 129. — Judgment and risk-taking, 133. — Surplus or scarcity profits differ from efficiency profits, 134. — Are not an element of cost, 135. — Defects of the labor theory, 136.

Among the various theories which attempt to explain the origin of profits, a small number still occupy secure positions in economic thought. The risk concept is familiar to all advanced students of economics; and the surplus theory of profit, as an excess above cost of production, constitutes an almost indispensable part of any thoro discussion of the entrepreneur's income. At the same time, the rent theory of profits, which explains the origin of this income as a mere differential return above a no-profit margin, has done much to emphasize the similarities between all shares in production. Finally, the labor theory by a simple method represents the entrepreneur's residual returns as massed into a single, but complex product, with many peculiarities. Other doctrines, of minor importance, present a variety of views which run the entire gamut of notions from the surplus concept, on the one side, to the labor theory on the other; and it is, therefore, plain that in tracing the irreconcilable division between the devotees of these

last two theories, the description finally given here of a pure efficiency profit,[1] derived from a reduction of costs, does not break entirely with the traditions of economic science.

The classical economists seldom failed to maintain that profits entered into the cost of production. Adam Smith's explanation of the nature and source of such returns was ultimately based, it is true, on the productivity of labor. Nevertheless, profits were regarded as really a payment for the risk taken and the services performed by the entrepreneur in production.[2] David Ricardo, however, did not consider profits to be a deduction from wages, but a surplus above the return of labor, which compensated the employer for the usual risk and trouble encountered in employing capital productively; and as such they were regarded as forming necessary costs of production.[3] "Mr. Malthus appears to think," said Ricardo in reply to that writer, "that it is a part of my doctrine, that the cost and value of a thing should be the same — it is, if he means by cost, 'cost of production' including profits."[4] Fortunately, this statement has set at rest any doubt as to Ricardo's classification of profits; and without this, the interpretation of the younger Mill would be less clear. The latter adopted in particular the point of view of Adam Smith that "The cause of profit is that labour produces more than is required for its support." In this respect Mill is plain: "If the labourers of the country, collectively, produce 20 per cent more than their wages, profits will be 20 per cent, whatever prices may or may not be."[5] But Mill,

[1] For a description of this theory see the American Economic Review for June, 1918.

[2] Smith, Wealth of Nations, Bk. I, chap. vi, pp. 50, 56.

[3] Ricardo, Principles of Political Economy, ch. iv, section 33, p. 68; sections 43, 44, pp. 97, 99, 101.

[4] Ibid., section 6, p. 39, note.

[5] J. S. Mill, Political Economy, Bk. II, chap. xv, section 5.

like Ricardo, appreciated the importance of the entrepreneur's sacrifices and, therefore, represented the risk-taking function as in a large measure the basis of a minimum profit — an adequate compensation for "some additional risk" over that incurred upon idle capital.[1]

By all three writers, profits were treated as essentially a cost element in the necessary or natural price of a commodity. To Smith, a minimum profit was the lowest ordinary profit, which "must always be something more than what is sufficient to compensate the occasional losses to which every employer of stock is exposed."[2] And Mill's "minimum rate of profit," by including interest and insurance against risk, resembles very closely Smith's "lowest ordinary rate of profit." Mill separates gross profits into interest, wages of superintendence, and compensation for risk;[3] but these also constitute a minimum profit which he treats as a part of necessary price: "The cost of production, together with the ordinary profit," says Mill, "may therefore be called the *necessary* price, or value of all things made by labor and capital."[4] But where commodities can be made in indefinite quantities, this ordinary profit, or "this necessary value, the minimum with which the producer will be content, is also, if competition is free and active, the maximum which they can expect." Now, as in the general trend of his discussion, Mill makes cost of production equivalent to "necessary price," it is but logical that minimum profit should be regarded as a constituent part of the cost of production. Here again, Mill was building on the work of Smith[5]

[1] J. S. Mill, Principles of Political Economy, Bk. IV, chap. iv, section 3, p. 441; see also Bk. II, chap. xv, section 2.

[2] Wealth of Nations, Bk. I, chap. ix, pp. 75, 76.

[3] Principles of Political Economy, Bk. II, chap. xv, sections 1, 2.

[4] Ibid., Bk. III, chap. iii, section 1.

[5] Wealth of Nations, chap. vii.

and Ricardo,[1] who had already established the concept of a natural price. And Mill has acknowledged that "Adam Smith and Ricardo have called that value of a thing which is proportioned to its cost of production, its Natural Value (or its Natural Price). They meant by this, the point about which the value oscillates, and to which it always tends to return."[2]

Altho the English writers of this period differed widely in their views of the origin of profit, our interest lies chiefly in the fact that Smith, Ricardo, and J. S. Mill were firm in their belief that minimum profits, at least, entered into natural price as a cost of production. By all three, profits were regarded as a surplus to which the employer was entitled because of the trouble, risk, abstinence, labor of inspection or expense, which he assumed in the process of production.[3] At the time when these men wrote, the right of contract was not so fully developed and there was less restraint upon trade than there is today. In the absence of complex industrial conditions, these economists were able to determine the exact location of the normal competitive plane which forms the natural dividing line between efficiency profits, on the one side, and scarcity surpluses including inchoate rent on the other. At least, to them profits were a part of the cost of production, rent a surplus above it. Of great pertinency is this fact to any present theory of profits.[4] From this simple idea of a normal

[1] Political Economy, chap. iv, pp. 65, 69; chap. vi, p. 97.

[2] Moreover, this normal value was supposed to make its appearance under a state of stable equilibrium; for the chapter is closed in these words: "but the condition of *stable* equilibrium is when things exchange for each other according to their cost of production, or, in the expression we have used, when things are at their Natural Value." Ibid., Bk. III, chap. iii, section 2.

[3] Smith, Wealth of Nations, Bk. I, chap. vi, p. 24; Bk. I, chap. x, pp. 50, 51; Ricardo, Principles of Political Economy (Gonner's ed.), pp. 68, 97, 101; Mill, Political Economy, Bk. II, chap. xv, sections 1, 2; Essays, pp. 107, 108.

[4] See also Cairnes, Some Leading Principles of Political Economy, chap. iii, section 3; Bagehot, Economic Studies, p. 197; Rogers, Political Economy, p. 139.

competitive line, which included profits in costs of production, have run many divergent views; but in assuming the task of unraveling this tangled web of economic theory, we shall always bear in mind the location of this point of normal value.

President Walker was one of the first of the surplus theorists to divert attention from this classical theory of a minimum profit; and it was exactly at the point of normal value, or natural price, that he constructed his first serious change in the established profit theory. Stated concisely, this noted writer expressly rejects the idea of a minimum profit as a cost of production at the margin. By presenting the important concept of a price-determining no-profit margin for which all profits are measured as differentials, he laid the foundation for endless confusion among economists. This no-profit margin forms the pivot upon which his theory of distribution turns. From it upwards in constantly increasing sums, the entrepreneur's returns finally amount to tremendous proportions. Consequently, this startling innovation led to the logical conclusion that profits are practically of the nature of rent, and not a part of the cost of production. Precisely as land rent is represented as a price-determined increment above costs, so the entrepreneur's profits are described as surpluses measured from the price-determining margin of production.[1] And, therefore, such profits would, under full and free competition, not form a part of the price of commodities, and are not obtained by a deduction from wages It is plainly apparent that Walker's theory of profits closely resembles the classical concept of rent; and that he has extended it until it comprehends what he might have termed "efficiency profits."[2] Doubtless this theory

[1] Political Economy, pp. 239, 250.

[2] The Wage Question, pp. 230, 245.

affected somewhat the thought of other economists. Especially may we call attention to the views of President Andrews, who expressly rejected risk as a "reason of profits," and preferred what he has designated as a nomenclature,—"taking pure profits, or profits proper, as the remuneration of special original talent exercised in any industrial direction." Altho this gain, except in the case of monopoly, as he explains, "is brought about solely by better management than the poorest which still continues," he concedes Walker's argument, nevertheless, by saying that pure profits are governed by a law analogous to rent and that "neither enters into the price of products, nor lowers or any wise antagonizes wages." Finally, he differentiates gains of opportunity due simply to mere chance from what he calls profits of opportunity in trade "created by natural ability functioning in purely economic ways." That is, profits, as he has described them, are said to vary mainly with ability, partly with opportunity.[1] While Walker's method of exposition is full and elaborate and his ideas are clearly expressed, the smaller work left to us by President Andrews is very compact, the thought is somewhat condensed, and his meaning is not always easily deciphered. Yet it is none the less plain that these two authors were not far apart in their conception of a rent theory of profits.

That this surplus concept of profits has become firmly rooted in American economic theory may be drawn from various excerpts. In a recent book of a widely known author, "profits are a result of fluctuations in market value and would not exist in a state of normal equilibrium." And under the same conditions, "Gross profits must include interest and wages. But there would be no net profits, or surplus profits, or profits in

[1] E. B. Andrews, Institutes of Economics, pp. 186–189.

the real sense of the word." Certain it is that Professor Seligman does not give recognition in his text-book to those profits of efficiency which arise solely from reduced costs of production and do not disappear in a normal state of equilibrium.[1] Quite in agreement with this view of Seligman's is an excerpt from Seager's text: "As the above analysis suggests, profits which are not monopoly profits are soon overtaken and eliminated by competition. If improvements were to cease profits from this source would soon cease also." [2] In this group may also be included Professor J. B. Clark, whose statement in relation to profits is very similar: "In actual business, competition is often sharp enough to prevent men from getting more than interest on their capital and a fair return for the labor they spend in directing their business; and pure theory here assumes that competition is always and everywhere sharp enough to do this." [3] In a somewhat similar vein runs the conclusion of Professor Patten: "The profits of which mention has been made are those of falling prices due to improved processes. When improvements cease, these also cease." [4] A. S. Johnson has made a rough but useful distinction between the surplus concept of profits and profits in the business sense of the term: "A surplus remains in the hands of the enterpriser after all costs have been met. This surplus is known in economics as 'pure profits,' or more simply as 'profit.' We must be careful to distinguish profit in this sense of the term from the income known as profit in the language of business. In the latter sense profit often includes interest on the enterpriser's capital and wages for his

[1] Seligman, Principles of Economics, pp. 353, 354.

[2] Seager, Introduction to Economics, p. 182.

[3] Essentials of Economic Theory, p. 87, see also pp. 116–119; Political Science Quarterly, vol. ii, p. 610.

[4] Patten, Theory of Prosperity, pp. 126, 127.

labor. Profit in the economic sense of the term is not essential to the continued operation of an established enterprise. Profit in the business sense of the term is a necessary income, since no one would remain long in a business unless he obtained a return representing interest on his capital and wages for his labor." [1] Needless to say, the modern concept of a surplus profit maintained in the respective works of these various authors is a distinct and most important departure from that contained in the writings of the classical economists. There is no more interesting contribution to modern economic theory than this peculiar residual concept of profit. It is founded upon their conception of the present dynamic state of industry; and the obvious harvest of great unearned surpluses at the present day goes far in stressing their point of view. Clear it is, that their contribution to economics is a most timely one.

Nor is this evolution of a surplus profit theory confined to American writers. It has been pointed out by Gide that " Professor Walras employs a formula which at first seems astounding, when he declared that *the normal rate of profit is zero*. By this statement he means that upon the supposition of absolutely free competition the price which the entrepreneur pays for productive services (including his own) must necessarily be equal to the price for which he sells the finished product; profits must therefore be equal to zero." [2] Gide himself, in an early text, states postively that competition cannot eliminate profits " by lowering the price of articles to the level of the cost of production, for in that case the employer would make no gains, and would cease to produce." Between the cost of production and the selling price, Gide allows a margin which represents minimum

[1] Johnson, Introduction to Economics, p. 238.

[2] Gide, Principles of Political Economy, p. 632, note.

profits in the form of producer's interest, insurance against risk, and wages for the employer's labor. However, in a later edition, this writer presents a more comprehensive analysis of the entrepreneur's functions and, after including such returns in the costs of production, accepts, almost unqualifiedly the surplus concept of profits. Profits as a surplus are possible, it is said, only when the entrepreneur is in possession of some sort of monopoly — " that is to say, if the entrepreneur brings nothing on the market except what anybody else can offer, there is no profit." [1] Finally, in the native land of the classical economists has appeared the most marked violation of the orthodox doctrine; for English authors are not wholly unanimous in their devotion to the labor concept of profit. The rapid strides of the present industrial evolution, the sudden dynamic changes of society and the appearance of fabulous profits have had their influence on even the most conservative writers. We may select a particular example. By making the entrepreneur an idle speculator in town sites, Professor Nicholson has extended the sphere of profits until it clearly includes land rent: [2] " A speculator who has the good luck (for, in general, there is more luck than skill) to hit upon the site of a future town has simply to sit still." It need hardly be repeated that these various views make profits analogous to the now familiar unearned scarcity increment. This phase of profits is not emphasized in the writings of the English classical school; but modern problems have forced it upon us and have served to stress the importance of this modern tendency in economic thought.

It would be strange, indeed, if so many recent writers had erred in the explanation of profits. The fact is, each

[1] Gide, Principles of Political Economy, compare pp. 483–485, ed. 1896, with pp. 630–632, ed. 1904.

[2] Political Economy, vol. i, p. 400.

is correct from his point of view; there is an element of truth as he sees it. A diversified entrepreneur's income has permitted careful investigation from widely divergent angles and has allowed emphasis to be placed upon totally different phases of so-called profits. The crudest analysis reveals the existence of a scarcity surplus above costs, which truly enough will be gradually eliminated by competition; and which will, of course, tend to disappear in a static state of equilibrium. There is probably no disagreement among economists on this point, for most writers will probably concede that a pure value surplus is truly an unearned increment. The surplus theory of profits, however, in the hands of certain writers, has gradually assimilated all residual incomes of the entrepreneur, except mere wages of management — the whole thus represented is said to form a market surplus which does not enter into costs.

On the other hand, the surplus concept of profit runs counter to the views of a large group of economists, and it is evident to numerous writers that the entrepreneur's personal disutilities resemble very closely the laborer's sacrifices. The undertaker is, therefore, allowed as profits little more than a substantial and somewhat liberal wage of superintendence which is conceded to be a cost in production, tho it is not always clear that this cost is price determining. Thus, in Bullock's text, the entrepreneur is "an organizer and independent manager of business," whose returns are necessary and differential profits. All entrepreneurs receive necessary profits which "include interest on invested capital," besides "the remuneration for the efforts and trouble that employers incur in the management of productive enterprises." The last element — "wages of superintendence, resemble the wages of labor." [1] Likewise in

[1] Introduction to Economics, pp. 424, 526; 3d ed., pp. 460, 462.

speaking of profits Professor Fetter has said: "They are not subtracted from the gains of labor but are earned, in the same sense in which the wages of skilled labor are earned. So long as some men have better organizing ability than others, have better judgment, are better able to take the risks, there is reason to believe that profits will continue." [1] In like manner, Professor Ely adds "wages of management," at least, to the cost of production. Also, "minimum profits are necessary profits, the profits needed to induce the entrepreneur to continue his productive work. In many cases they can be measured roughly by the salary which the entrepreneur could get by working for some one else." [2] Particular functions and costs of the entrepreneur have been presented in a very concise form by Professor F. M. Taylor, who finally concludes that the sacrifice or disutility of assuming the responsibility of production necessarily forms a class by itself. According to this analysis, the entrepreneur's costs classify as follows: "(1) Actual outlay of the entrepreneur. (*a*) Money costs. (2) Expression in money of the entrepreneur's contributions, in so far as they are purchasable. (*b*) Real cost or sacrifice of assuming ultimate responsibility — this having its objective expression in money profits." [3] In comparison with the preceding views this is a liberal interpretation of the labor function. Certain it is, that these economists are on safe and conservative ground in affirming that costs include mere wages of routine management. But it is to be observed that this labor theory, in its broadest aspect, extends "wages of superintendence" to the entire legitimate profit income of the entrepreneur — a scope formerly given to profits probably by the English school and

[1] Principles of Economics, p. 291.
[2] Outlines of Economics, pp. 440, 441.
[3] Principles of Economics, p. 52.

carefully redefined and elaborated in several recent works.

Consequently, to the more radical followers of this labor theory, all profits, after being purged of grossly illegitimate gains, are merged into one share — a labor income. An eminent English economist, Professor Marshall, while devoting considerable space to a discussion of the subject of profits, speaks thus of the entrepreneur's income: "All his prospective gains enter into the profits which draw him towards the undertaking; all the investments of his capital and energies in making the appliances for future production, and in building up the immaterial capital of a business connection, have to show themselves to him as likely to be profitable, before he will enter on them; the whole of the profits which he expects from them enter into the reward, which he expects in the long run for his venture. . . . Thus the whole of the normal profits enter into true or long-period supply price." [1] And finally, in the recent text of Professor Taussig may be found, perhaps, the clearest and most concise statement of this point of view: "Whether the term 'business profits' should be thus limited is primarily a question of phraseology. The emphasis which this view puts on the relation between improvements and the business man's gains is just. The large and conspicuous gains are in fact associated almost invariably with advances in the arts, with boldness and sagacity in exploiting new enterprises and new methods. None the less, this mode of sharply separating business profits from wages seems artificial. Even the routine conduct of established industries calls for judgment and administrative capacity, and so for the exercise of the same faculties that are more conspicuous of rapid progress. To separate even roughly the earn-

[1] Principles of Economics, 5th ed., pp. 617, 618.

ings of a successful business man into two parts — one wages, the other 'profits' in the sense of gains from progress — would seem to be quite impracticable. Looking over the whole varied range of earnings among those engaged in the business career, it is simplest to regard them all as returns for labor — returns marked by many peculiarities, among which the most striking are the risks and uncertainties, the wide range, and high gains from able pioneering." [1] Thus have Marshall and Taussig placed themselves on record in remarkable opinions — notable for their thoro adherence to the original profit concept of the classical economists and for their rejection of the surplus concept of recent theory; for in the works of both of these men, efficiency profits, tho often described as great prizes which go to the skilled, daring and alert, are never separated entirely from the labor income.[2]

Doubtless every one of the preceding profit theories occupies, in a restricted sense, its appropriate niche in economic thought; but if careful consideration is given to the foregoing excerpts, it soon become obvious that the more radical representatives of both the surplus and labor theorists have assumed in their premises more than is scientifically sound, and in their conclusions more than has really been verified. In either case, the primary steps in their analysis are not conclusive; and, above all, both theories by overlaping include in their scope wholly unlike elements. To be more exact, large returns arise from the profits of efficiency which are due solely to new ideas and reduced costs in the process of production. These incomes are the rewards of dynamic efficiency and risk-taking rather than of labor; and,

[1] Principles of Economics, vol. ii, p. 185.

[2] This tendency to view profits either as largely temporary and unearned or as mostly permanent and earned may also be seen in the discussion of risk profits — a topic to be treated in a separate article.

moreover, they are not eliminated by competition, even in the static state. That is, exercising absolute control over the destiny of capital, inventing new ideas, and taking risks are not considered here as primarily a part of the labor function. Plainly stated, these writers have failed to analyze properly the various incomes of the modern enterpriser; and their works do not show due appreciation of conditions as they actually exist. They see at one time only one side of the tremendous, but most alluring, profit-making function. In fine, neither of these theories differentiates the returns of intramarginal producers; and strange enough, no attempt is made to separate the profits of efficiency from the fluctuating market surplus.

In marked contrast to both the surplus and the labor theories, a division of the entrepreneur's residual surplus into both earned and unearned increments, permits a much desired scientific classification of profits. Let us say, first, that the entrepreneur receives an earned income because of his peculiar dynamic efficiency in controlling the destiny of capital, in incorporating ideas into industry and in assuming all risks in connection with them. This function serves in particular instances to reduce outlays and is borne solely by the entrepreneur. We would first separate here efficiency profits, under freely competitive conditions, by making them equivalent to the net output measured by the reduction of costs to the entrepreneur. Or, if one prefers to use another method, the net output may be valued in the costs of the same quality of product on the extensive margin. In the second place, all unearned profits may, as a rule, be distinguished as various forms of the scarcity increment, which arise from an increased intensity of demand forces. Whether such profits are due to natural market fluctuations, to restraint of trade, or to

exploitation of the individual, they are usually determined causally by the comparative scarcity of the desired product; and may, therefore, be measured exactly by the difference between the cost of production and the market price. The first class of profits, however, are earned incomes; that is, returns for economic effort, while those designated here as scarcity gains are surpluses above costs and wholly the result of the fluctuating intensity of demand forces. Even tho scarcity profits may be induced by a fluctuating supply, they are not the result of economic sacrifice. This plan of classification is most pertinent to a differentiation of the intra-marginal profits of the more efficient producers; but obviously it will be found by careful comparison to run counter to both the previous surplus and labor theories of present-day writers.

In presenting a distinct theory of efficiency profits, we shall rely partly on the fact that this dynamic function of the entrepreneur is fully recognized in American law, and that his peculiar ability, or inventive faculty, is readily distinguished from the mechanical skill of the mere laborer, manager, or superintendent. The sacred right of every man to possess exclusive ownership in his own secret or discovery is a sort of inalienable right which has come down to us from ancient times, and more recently been hedged about with legal barriers. This right extends even to little things. Thus a workman, while in the employ of his master, changed the direction of a pipe entering an iron mold so that the dross in the molten metal was thrown toward the center. The employer claimed the invention. Yet in the application of the legal principle to this simple case, the court raised the inventive powers of the workman above the field of routine service, and made this act of the laborer wholly independent of the claims of his employer. This

exclusive right of the entrepreneur extends, of course, to inventions, discoveries and trade secrets. But the strictly defined legal sphere of invention includes, in the opinions of the courts, only the highest order of dynamic service performed by the entrepreneur. The design of the patent law is to reward only those who have made some substantial advance in the useful arts.[1] The subject of a patent must, therefore, embody something more than what any skilled workman, if called upon, could produce; something more than what may seem to involve the exercise of extraordinary mental powers in the everyday work of laboratory routine.[2]

In this connection, however, if a much desired result is secured through a patented device, which has never before been attained, want of invention cannot be maintained on the ground that it is merely a combination of known elements [3] or that it is so simple in construction that any one can make it.[4] Certain it is, tho the sphere of invention is strictly limited and narrowed by analysis and definition, the significant fact remains that the slightest *invention* in business and the faculty which creates it, are legally recognized as in no way connected with the routine conduct of an enterprise.

[1] Atlantic Works v. Brady, 107 U. S. 199, 200; Tiemann v. Kraats, 85 Fed. Rep. 349.

[2] Badische Anilin and Soda Fabrik v. Kalle, 94 Fed. R. 173; Perkins Electric Switch Manufacturing Co. v. Gibbs Electric Manufacturing Co., 87 Fed R. 923, 924; Vinton v. Hamilton, 104 U. S. 491. Again, it is not enough that an improvement is new and possesses great economic advantages for it to rank as an invention, it must be the product of the inventive powers. (Magin v. Karle, 150 U. S. 391; Burt v. Evort, 133 U. S. 349; Hild v. Wooster, 132 U. S. 700; Watson v. Railway Co., 132 U. S. 161; Munson v. New York City, 124 U. S. 610; Morris v. McMillan, 112 U. S. 247.) Thus it is not an invention to duplicate the parts of a machine unless the alteration in it causes a new mode of operation. (Dunbar v. Meyers, 94 U. S. 197; Slawson v. Grand Street R. R. Co., 107 U. S. 653; Millner v. Voss, 4 Hughes, 262.) Neither is the mere act of assembling processes, machines, or enterprises to be classed as invention. (Hailes v. Van Wormer, 20 Wallace, 353; Reckendorfer v. Faber, 92 U. S. 357; Pickering v. McCullough, 104 U. S. 318.)

[3] Loom Co. v. Higgins, 105 U. S. 591.

[4] Dubois v. Kirk, 158 U. S. 63; Potts v. Creager, 155 U. S. 608, 609; Krements v. Cottle Co., 148 U. S. 561.

Consequently, it stands out as a part of that dynamic function which the entrepreneur alone exercises.

But this legal right of the entrepreneur extends also to trade secrets; and in this relation he possesses several legal methods of preserving the results of his peculiar dynamic efficiency. Tho he may not secure letters patent for his device, he may, perhaps, preserve it for a longer time through secrecy. In the first place, this function of the entrepreneur is protected from the public and from his own employees. It is a well known rule of law that where an employee has entered the service of another and has had imparted to him the secrets of a business, he is bound without an expressed contract to preserve them as sacredly as his own.[1] This right of the entrepreneur extends to a secret code used by him in entering prices in a trade catalogue; one who obtained the key to the code so used, was enjoined by the court from disclosing the information to others.[2] Similarly, a counting house clerk was not allowed to make known what he had learned in performing his duties.[3] In like manner, an engine maker's clerk, who had made a table of dimensions of his employer's engines, was prevented from using or disclosing the data so obtained.[4] In a like instance an injunction was granted to prevent the publication of etchings made simply for amusement.[5] So in a bankruptcy case, one who owned a secret process in the business was allowed to remove all machinery necessary to prevent its disclosure to others. A slight change in the method of manufacture may, of course, be of great advantage to the entrepreneur; but if the general process is well known, he may be unable,

[1] Simmons Med. Co. v. Simmons, 81 Fed. Rep. 163.
[2] Simmons Hardware Co. v. Waibel, 1 So. Dak. 488.
[3] Tipping v. Clarke, 2 Hare, 393.
[4] Merryweather v. Moore, 61 L. I. 506.
[5] Prince Albert v. Strange, 18 L. J. 120.

except through a contract with his employees, to protect his trade secret. For example, in one instance, a method of collecting insurance was disclosed to an agent without binding him to secrecy, and it therefore became common knowledge.[1] Again, of several manufacturers making a well known soap, one who succeeded by a slightly changed process in making a better article than that produced by the others, was unable to maintain in court that he possessed a secret process.[2] In another instance it was impossible to secure an injunction to protect a secret process for making pills, for the court decided that it would be unable to discover whether the method had been infringed upon unless it were disclosed in court.[3] From these illustrations it is plain that wherever possible the peculiar dynamic efficiency of the entrepreneur is protected by law from his employees and the public. In fine, against those who have surreptitiously gained knowledge of his trade secrets, the entrepreneur's right of relief in equity has always been recognized.[4]

It is also a significant fact that the law distinguishes between mere managerial ability and the peculiar powers of the inventor. That is, the inventive faculties are emphasized and raised above even the skill of a general manager. In Hapgood *v.* Hewitt a general superintendent of a manufacturing department had also agreed to devote his time and services "to devising and getting up ploughs for the corporation" by which he was employed. The finding of the court upon the evidence is most pertinent. It was declared "(1) that

[1] Bristol v. Equitable Life Assurance Society, 132 N. Y. 264.

[2] Bell and Bogart Soap Co. v. Petrola Manufacturing Co., 54 N. Y. Supp. 663.

[3] Newberry v. James, 2 Meriv. 451; see Williams v. Williams, 3 Meriv. 158.

[4] Fralich v. Despar, 165 Pa. St. 24; Stewart v. Hook, 118 Ga. 445; Salomon v. Herts, 40 N. J. Eq. 400; Thum Co. v. Tloczynski, 114 Mich. 149; Peabody v. Norfolk, 98 Mass. 452.

Hewitt was not expressly required, by his contract, to exercise his inventive faculties for the benefit of his employer, and there was nothing in the bill from which it could be fairly inferred that he was required or expected to do so; (2) that, whatever right the employer had to the invention by the terms of Hewitt's contract of employment, was a naked license to make and sell the patented improvement as a part of its business, which right, if it existed, was a mere personal one, and not transferable, and was extinguished with the dissolution of the corporation." [1] In Illinois the mere fact that a superintendent received wages, materials, and assistance from his employer while making his models did not give the latter a right in the invention itself. The peculiar function of the inventor or entrepreneur, as we would describe him, has been carefully distinguished by a court of that state: "An invention is the product of the mind, and the making of models and performing of the experiments are only mechanical operations and mere labor performed for appellant (the inventor) under his direction, for which he would be liable to be charged, or the time lost deducted from his wages or time. As between employer and employee, the right to the invention belongs to the one who conceives the idea, and follows it out to practical invention." [2] The contents of these two decisions have an important bearing on the labor theory of profits, for they go to the heart of this complex question of the entrepreneur's function and point out what is all-important. They rightly distinguish the inventive powers of the entrepreneur, lend emphasis to his peculiar dynamic efficiency, and separate in a thoro manner his sphere of activity from that of the manager.

[1] Hapgood v. Hewitt, 119 U. S. 233; see Peabody v. Norfolk, 98 Mass. 460; Dalzell v. Deuber Manufacturing Co., 149 U. S. 320.

[2] Dice v. Joliet Manufacturing Co., 11 Ill. App. 114, citing Agawan Co. v. Jordan, 7 Wall. 603; Collar Co. v. Van Dusen, 23 Wall. 563.

We have, therefore, concluded that to confuse the superior function of one who furnishes an invention, discovery, or trade secret with the services of superintendence and management is to prevent proper analysis, and to neglect the earned profits of efficiency. Nay, more, it serves to defeat the full purpose of the labor theory of profits; for what is so obviously patent of the invention function is also true of all dynamic services of the entrepreneur. There is room for a labor theory of profit; but in its present form it includes too much, and, therefore, defeats a proper analysis of the residual income. That is to say, by merging this peculiar dynamic efficiency into the labor concept of profits, we have failed to recognize the importance of a service which really forms a proper foundation for an *efficiency theory of profits*. Hence by means of the foregoing excerpts we have sufficiently emphasized the inventive powers of the undertaker as a basis of efficiency profits. At the same time, it has been our intention to separate them from the activities of mere labor, and to show that the labor theory of profit is not in harmony with the present conditions of industry.

It has, however, been noted that the entrepreneur's dynamic activities contain something more than the creation of inventions and trade secrets. Stated concisely, there still remains the important elements of judgment, control, and risk-taking. No group of laborers, however adaptable, skilled and aggressive can, as such, perform these tasks of the entrepreneur. Upon the element of judgment must depend the acceptance or rejection of all new ideas and changes leading to the successful expansion or contraction of industry. This is obvious from the very fact that whether new ideas — as they take the form of abstract capital — are the product of his own mind or are furnished to him by

others, he alone embodies them in the productive process; that is to say, takes the risk and responsibility of using them. Judgment is simply an indispensable part of the entrepreneur function — the very leaven to industry; and extends to every material unit and active service utilized in a dynamic enterprise. It accepts the methods of control to be used, the forms of coördination to be established, and the proper risks to be taken. It unlocks the door to success in every venture whether it be only the small corner stand of the popcorn vender or the vast empire of the railroad magnate. In relation to the entrepreneur's services it forms the cement to industry. It binds the functions of control, coördination, and risk-taking into a concrete working unit; and these powers distinguish his dynamic function from that of the laborer and the capitalist.

At this point let us compare briefly the profits of efficiency with the scarcity surplus. The efficiency profits of the intra-marginal producer no more resemble the scarcity or speculative profits above the competitive plane than do real wages and natural interest. Profits of efficiency arise from successfully reducing real costs of production. We may note, for example, that every new capitalist, laborer, or entrepreneur who supplants a less capable one, increases the supply of productive services, the amount of efficiency profits, and decreases at the same time scarcity gains. By creating newer and more efficient enterprises, the entrepreneur reduces, then, to some extent the previous scarcity of capital and commodities. A sudden increase in demand may, of course, cause the appearance of speculative profits, but to say that increased production alone means a greater scarcity of economic goods is asserting an absurdity. More economic processes and more commodities are produced through the increased efforts of the more

efficient entrepreneur; and, moreover, he is entitled to that part of the increased product which compensates him for his added outlay and his risk disutility — a true differential. To compare this increment to speculative profit or to rent is confounding the real product of efficiency with a scarcity surplus.

The surplus theorists, it is true, rightly emphasize the existence of a speculative profit above the cost of production, which tends to disappear as industry approaches a static state. Their service in this respect has drawn our attention to this form of the unearned surplus and its relation to production. Moreover, if accountants can determine the cost of an article, they are certainly able to ascertain the amount of the unearned increment, which is simply the difference between the costs of production, including efficiency profits, and the market price. But when economists make this surplus identical with the efficiency returns of the entrepreneur, certain fundamental differences between the two forms of profit are overlooked. The two incomes hold entirely different relations to price, and, as has been noted, arise from wholly different causes. Speculative profit is *determined* or measured by the scarcity price; efficiency profit, on the other hand, aids in *determining* or fixing the normal price. The latter return is a cost of dynamic changes in production, is governed by the technical laws of industry, and corresponds to a given positive effort on the part of the entrepreneur in the technical process of production. The former is solely a phenomenon of value, is governed by the law of demand, and corresponds to a given human desire in the process of consumption. Efficiency profit tends to increase generally by virtue of increasing individual efforts to reduce costs below the competitive plane, and the rate varies between producers; speculative profit

tends to increase, as a whole, by reason of increasing competitive desires and demands of consumers, and the rate of increase, where price rises uniformly, is the same for all producers. One is due to the increased services and efficiency of the producing agent, the other to the latter's scarcity and the limitation of its producing power. It is, of course, plain that this surplus theory will not explain adequately the origin of the entrepreneur's various incomes; and it is none the less obvious that even in a static society, an efficiency or differential profit will continue to exist until all human powers have become paralyzed and the forces of nature have ceased to work.

We may return now to the more conservative view presented by the labor theorists. The labor theorists, from their side of the controversy, have overlooked three important things which the actual conditions of industry make it necessary that the economists should observe. In the very beginning, they do not differentiate the peculiar dynamic efficiency of the entrepreneur from his labor function. To this function we have credited largely changes in production and the creation of efficiency profits. But as the economic world is now constituted, the wide range of this dynamic efficiency covers a multitude of questionable acts, which, under the guise of able pioneering, are commended by both legalists and economists as just endeavors to obtain the more lucrative gains of progress. However, confined to its proper sphere, this dynamic function, as we would restrict it, consists in incorporating ideas or abstract theories into the productive process and taking the necessary risks on them. On the side of concrete production, as distinguished from the field of consumption, this function serves a highly useful purpose; it is, in fact, the highest order of effort known in industry. But

in the fields of exchange and distribution this service, through the coercion of demand and consumers, may assume the form of legal robbery. By way of illustration, in the correlation of supply and demand, the entrepreneur's efforts to secure a permanent market, to direct and control the flow of trade, and to outdistance his rivals, have assumed such elaborate schemes that his peculiar dynamic efficiency must certainly be recognized as overshadowing the nominal function of labor. By absorbing into the labor concept of profit the most important, and at times the most injurious acts known to the economic world, these theorists have avoided a most needed analysis. In fact, in the zealous endeavor to include all profit incomes in the labor concept, the latter theory has been so extended in scope that it now embraces the entire skein of tangled profit notions from the meager hard-earned wages of labor, on the one extreme, to the abundant harvest of unearned good will surpluses on the other. Obviously, the doctrine that the whole varied range of incomes of a successful business man are simply the returns of labor, is fully as misleading to jurists, statesmen, and business men as its exact antithesis — the surplus profit theory — *is unscientific and untrue.*

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PRICE FIXING AND THE THEORY OF PROFIT

SUMMARY

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I

PRICE fixing represents one of the most important economic novelties that resulted from the war. Whether prices first rose as a result of the sudden and abnormal demand caused by the war or whether the effective cause of the general increase in prices was the enormous expansion of currency and credit, price control served as a check both on the expansion of paper and on the elevation of the price level. High prices were obviated, and the expansion of currency was impeded. It is doubtful whether the economic significance of price control was realized or understood by the various price-fixing agencies of the United States government. A considerable number of special and different reasons influenced these different agencies in fixing the price of different commodities. In some cases one reason or purpose was predominant, in other cases more than one or even all of the reasons and purposes were responsible.

Prices were fixed for two great classes of purchasers: the commandeering departments of the government and the consuming public. When the government com-

mandeered, prices were fixed so that, by the prevention of profiteering, governmental expenditures might be reduced. Prices were fixed for the public so that the psychology of high prices and the exploitation by profiteers might have no chance to breed discontent. The margins of jobbers and retailers were restricted more extensively in the case of foods and fuel, where the consuming public was more directly affected. But there were other reasons and purposes that influenced particular price fixings. A notable example was the first fixing of the price of wheat — a minimum price fixed to insure an adequate production.

Congress fixed this minimum price of wheat by legislative enactment. The president, himself, fixed the first prices for bituminous and anthracite coal. The great purchasing departments of the United States government, the Army, the Navy, and the Emergency Fleet Corporation fixed the prices at which they commandeered. In some cases these organizations did not agree with each other as to a proper price (as in the case of fuel oil prices); in a number of cases they fixed different prices for each manufacturer (as in the case of some of the food prices). The purchasing departments were helped by the War Industries Board, the Food Administration, the Fuel Administration, and the Federal Trade Commission. The principal reason for the appointment of the Price-Fixing Committee of the War Industries Board and of the Food Purchase Board was the standardization of prices.[1] The Price-Fixing Committee fixed the prices of all the more important staples; in many cases they furnished or allotted these staples to the producers who were manufacturing war materials. The Food Administration and the Fuel Administration

[1] The Food Administration, the Army, the Navy, and the Federal Trade Commission were represented on the Food Purchase Board. These departments and others were represented on the Price-Fixing Committee.

controlled the prices of foods and fuels; their work was for the benefit both of the purchasing agencies of the government and the consuming public. The Food Administration was authorized to fix margins of profit above cost, but was not supposed to fix prices. The Food Purchase Board, however, was authorized to fix prices. There were several unique cases of price fixing: in the case of the news print paper, the Federal Trade Commission, the Department of Justice, and a federal court, all had a part; in the case of rubber and hemp, the War Trade Board fixed the prices.

The number of agencies that fixed prices and the different reasons and purposes of the particular price fixings gave rise to several different methods of price control. These methods may be divided into two general classes — corresponding to the two types of price determinants. Most economists believe that price is determined at any one time by the forces of supply and demand, but that over considerable periods price tends to be equal to the marginal cost of production. In the first kind of price control, the factors of supply and demand were emphasized; in the second, the cost of production was used as the basis of the price fixing. If, at any particular time the demand becomes abnormally great and the supply cannot be increased sufficiently, prices rise and the entrepreneurs reap unwonted profits. This was true of the period during the war. Thus, when the forces of supply and demand allowed such abnormal profits in all branches of industry, it was thought necessary to maintain prices artificially at about the marginal cost of production. However, in some cases the forces of supply and demand, as they existed before the war, were used as the price determinants.

Only a few sentences are necessary to dispose of the first kind of price fixing, which was used in but few in-

stances. In some few cases prices were fixed at the point prevailing in the market at the time of the price fixing. In anticipation of a rise, prices were held at what seemed a reasonable figure. Such price control represented a convenient expedient, and showed no evidence of a carefully worked out method. In other cases, an average of prices over a number of years was used as the basis of the price fixing. Such an average price could have been assumed to be a normal price — or a price approximately equal to the average marginal cost of production. However, the marginal cost of production in 1917 or 1918, even if there had been no war, might have showed wide divergencies from the average marginal cost of production. If, for example, there had been a marked decrease in the production of flour sacks in 1917 and 1918, the resultant shortage, which would have been in no wise related to the war, should have been allowed to have some effect on the price of flour. An average of pre-war prices would probably not have shown the effect of such a special condition, whereas the cost method of price determination gave every fact of that kind a proper amount of importance. An average of prices, furthermore, would have made no allowance for the effect of the general rise in prices due to the increase in currency.

The cost method of price fixing built up prices from the elements in the entrepreneur's cost, whereas the first method took a price or an average of prices already created by the forces of supply and demand. The cost method was the more practicable method and was used in nearly every case.

A number of variations of the cost method of price fixing were employed. In some cases, prices were fixed after the production had been completed; in other cases, prices were fixed before the production was under-

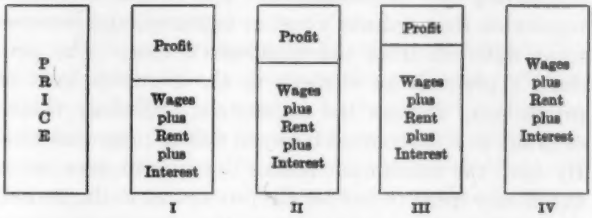
taken. (In such cases future costs had to be estimated.) In still other cases the problem was somewhat more complicated: e. g., prices were set for some of the foodstuffs before they had been produced; later, as a result of the objections of certain of the manufacturers, the costs of those manufacturers were investigated and the prices paid for their product were amended where necessary. Ante-production prices represented a standard price for all manufacturers, whereas post-production prices may have varied for different manufacturers. In ante-production price fixing two considerations had to be borne in mind by the price-fixing agencies in setting a single price for the entire industry; first, the price had to be high enough to insure the production needed in any particular case; second, the price had to be low enough to prevent unduly large profits. The ante-production price fixing represented the most important and the most difficult kind of price control.

II

The economic analysis of the relation of cost of production and price under competitive conditions might be represented graphically. In order to make such representation it would be better to select an industry in which the product was a staple of a standard grade. It should be taken for granted that all manufacturers sold this grade at the same price. It would be helpful, moreover, to assume that the producers or entrepreneurs borrowed their capital.

Group I represents the most efficient producers and Group IV represents the least efficient producers, i. e., the marginal or no-profit producers. The manufacturers represented in Group IV would have had to reduce their expenses or forego profits. (It is assumed

that competition standardized price so that the producers in Group IV could obtain no more for their product.) If these conditions be taken to represent a



competitive, tho artificial, market the problem of price fixing presents no great difficulty. If the production of Group IV was found to be necessary, the price fixed had to cover the wages, rent, and interest paid by the manufacturers in that group. A bare economic analysis, then, made prices equal to the wages, rent, and interest of the least efficient producer.[1] It will be shown later that the manufacturer's expenses can be analyzed roughly into wages, interest, and rent. (This is not strictly true except for producers in the very first stage of production, inasmuch as manufacturers who do not produce their raw materials have an element of profit in their expenses. See p. 145.) The expense figures, then, which were chosen for price fixing when the price was intended to stimulate production, were naturally those of the least efficient producers. If only a part of the production was needed, the figure chosen had to be just high enough to cover the expenses of all of those producers whose output gave the needed supply.[2]

[1] His expenses represented the marginal cost of production.

[2] The least efficient producers who remained in the industry were then assumed to be the only marginal producers whereas some of the more efficient producers were often marginal producers in that the fixing of a price which they considered unsatisfactory might have induced them to go into the production of another product for which their plants were suitable and on which they might have been able to realise an even greater

Altho the cost method of price fixing was based on an economic analysis of the relation between cost and price, the economic cost of production was developed from the accounting cost of production. The accountant's cost represents the producer's cost or expenses, and is somewhat different from the economist's cost. The producer's profit is an element in the economic cost of production, whereas the accountant ordinarily thinks of profit as a differential between selling price and cost. By cost, the accountant means the current expense or the money spent to pay for the production in the period. As a rule, altho not invariably, the amount of money included in cost must be paid to others — thus, no rent is allowed on land owned by the producer or corporation. Furthermore, the expenses must be current — thus, no return on permanent investment is allowed in cost. The accountant does not consciously classify the parts of cost or price according to the factors of production but separates the current expenses, which commonly represent payments to others, from the interest or return on the permanent investment, which may or may not be owned by the producer.

Whether the accountant has any conscious classification and whether he follows it consistently are matters on which the later discussion of this paper may throw light. Nevertheless, altho he does not classify in the way that the economist would, his cost statements furnish the material for a thorogoing economic classification. In order to show that the items into which the

profit. Of course, successful price fixing was predicated upon general price fixing. Therefore, if prices generally were fixed it would have been questionable economics to attempt to restrict a producer to one product if he could have produced another more economically. Furthermore, there is no reason to believe that the movement of entrepreneurs and of capital would have been in one direction; with a general price fixing, it was to be expected that some of those producers in allied industries, who were supermarginal producers, might have come over to the industry in question. When, however, a large production of a particular commodity was especially desired, it was necessary to increase materially the margin above wages, rent, and interest in constructing the selling price.

accountant analyzes cost may be considered analogues of the shares in distribution claimed by the several economic factors, a careful analysis of the elements of cost seems necessary.

The extrepreneur theoretically need not furnish his personal services in production; he need not own his land or buildings; nor need he have capital for his undertaking. Therefore, the entrepreneur must pay wages, rent, and interest. Roughly speaking, these are his costs; yet, the accountant's treatment of these items is not so simple as this theoretical analysis of cost would seem to imply.

The first element in the producer's cost of production is the raw material which is to be manufactured. This raw material represents embodied labor, land, capital, and entrepreneurial effort, and could, if necessary, be reduced to wages, interest, rent, and profit. The accountant is only interested in showing that the amount of money, which is represented by " Raw Material," is the exact amount the producer had to expend — not the raw material purchased during the period, but the raw material actually used in the production during the period.

The second element in cost is " Labor " or " Wages." When the producer or entrepreneur is actively engaged in the business, his salary is not included in " Labor " but in the " General and Administrative Expense." If the business is incorporated usually some of those actively engaged are stockholders, i. e., entrepreneurs. Their salaries are included in " Salaries of Officers." The inclusion of salaries of stockholders in cost becomes questionable when the accountant's classification is considered. Such salaries are not actually paid to outsiders unless the officers of a corporation be considered as such. One method of hiding profiteering was the in-

flation of cost by the inclusion of rapidly increased salaries.

The entrepreneur of economic theory need own no land and need pay no rent. A large number of entrepreneurs, however, do own their land and have to pay rent. It would be natural to expect that the accountant would include in cost the rent which such an entrepreneur would have had to pay, had he not owned his land. However, most accountants do not allow rent of this kind as a cost item. They insist that such an item is not absolutely calculable; that it is not one of his expenses in the sense that the raw material and the labor for which he must pay are expenses, but that it represents a return on his invested capital. In other words his investment in land should be looked upon as any other capital investment on which the return is determined by the rate of interest.

Implicit in the argument for the exclusion of rent from cost is the assumption that interest on investment is not a cost item. Interest on investment includes bond interest. Some accountants believe that interest should be included in cost on the ground that capital is an expense of the same kind as labor or raw material. The accountant who refuses to include it in cost, makes a very marked distinction between expenses, which must be paid to others for goods or services rendered, and the allowance for a return on the capital invested in the business by the producer. An estimated return on investment is not considered an expense. Rent, which the producer actually pays, is allowed in cost, but an estimated rent on land owned by the producer is excluded; the land which the producer owns is considered a part of his investment. Interest on short term notes (notes for less than a year) is usually allowed, but interest on permanent liabilities (i. e., investment) is excluded. If

a producer has invested his own capital, he is not allowed to include in his cost an estimated interest on his investment.[1]

The inclusion of the other elements in cost should be comprehensible after this analysis. Supplies, repairs, and the other current necessities of a business are allowed in cost. Supplies and repairs, as in the case of raw materials, can be analyzed into wages, rent, interest, and profit. Investment in machines, which are expected to last for a long period, is not allowed in a monthly or even a yearly cost.

Such accounting costs for a large number of producers were obtained by the price-fixing agencies.[2] If production of the commodity, for which the price was to be fixed, needed to be stimulated, the cost chosen had to represent that of the highest cost producer.[3] The costs obtained represented completed production; thus, for ante-production price fixing such costs had to be amended by estimating anticipated increases in materials and wages. If only a part of the production was needed, the cost chosen had to be just high enough to insure that part of the production. For example, if only 75 per cent of the production of a certain commodity were needed, and if 75 per cent of that commodity were produced at a cost less than $1.00, the cost chosen would

[1] Depreciation on fixed assets is allowed. If money is invested in the bonds of a corporation or left in a commercial bank, not only is a yearly interest paid but the capital is returned unimpaired after a definite period. However, if a producer invests his capital in tangible assets, which are subject to depreciation, he has nothing of his original capital goods after a period of time. For this reason he must put by a definite sum yearly in order to cover the cost of the capital goods in which he invested. Thus, altho the interest on his capital investment is not allowed in cost, the current depreciation on his capital goods can be included. It should be noted that the depreciation is not paid out, i. e., it is not an actual expense, but is in the nature of an investment charge in that its purpose is to replace investment.

[2] The accountant obtains unit costs for the purpose of price fixing by adding the the items of cost enumerated and by dividing the sum by the number of units produced.

[3] In most cases, some few very high cost producers were deemed so inefficient that their costs were disregarded. The cost chosen was often called the "bulk-line cost" — i. e., the cost that covered the bulk of the production.

have been approximately $1.00. It should be noted that even to the cost of the least efficient producer, a margin had to be added inasmuch as the accountant allowed in cost no interest on borrowed money or on investment.[1]

Altho the foregoing analysis seems to present the economically proper application of the cost method of price fixing, there were many variations from it in actual practice. In a number of cases the average cost rather than the high cost was used as a basis for price.[2] In

[1] Some of the price-fixing agencies allowed a percentage of cost as the margin. This method of price determination was used in fixing prices to be paid to individual producers, whose goods had been commandeered. Obviously such a method encouraged a padding of costs. It was to the manufacturer's advantage to have as high a cost as possible if his margin was to be determined on that basis. Indeed, if each manufacturer had been paid on the basis of his own cost and a fair return on his investment, there would have been little inducement to economize. A general price for all theoretically made every producer try to become a low cost producer in order to make his margin, which was a differential varying inversely with his cost, as large as possible. An ingenious accountant attempted to prove that a percentage of cost would have amounted to about the same thing as a percentage of investment. His contention was based on the fact that in those periods when costs were high a larger investment became necessary. His argument was invalidated by the fact that the high cost producer might have been expected to show a low investment per unit of product, whereas the low cost producer should theoretically have had a large investment. Thus, when the "cost plus" method was employed, the margin above cost allowed the high cost producer was much larger than it should have been.

[2] Since this paper was written, Professor Taussig's "Price-Fixing as Seen by a Price-Fixer" has been published in the Quarterly Journal for February, 1919. Professor Taussig explains that the cost chosen as a basis for price was determined by the quantity of production needed. This cost was called the "bulk-line" cost (i. e., when the bulk of the production was needed); and the producer who produced at such a cost, the "bulk-line" producer. This cost, Professor Taussig asserts, was usually found at the point which included from 80 per cent to 90 per cent of the production. Thus, the "bulk-line" cost was not necessarily the highest cost. "Extreme high costs in individual cases are part of the flotsam and jetsam of economic life — accidents, of no real significance."

Professor Taussig speaks of this "bulk-line" producer of the price-fixing period as the marginal producer of that period, i. e., the price determining producer. He apparently considers that all of those producers above the "bulk-line" producer are the flotsam and jetsam of economic life. He does not think, however, that price fixing on "the basis described is the same as that which would obtain if normal forces were working under normal conditions." Professor Taussig thereupon urges an interesting justification for the average cost, which it is well known the Price-Fixing Committee used in some cases in price determination.

To quote his words: "If the differences in cost which are indicated on these charts rest on physical causes — if they are due to forces in nature, not in man — the normal or long-period price may be expected to conform to marginal cost. But if they rest on the differing abilities of men, the normal price may be expected rather to conform to average cost, or at all events to fall below the bulk-line. . . . Assuming that the object to be attained is conformity to fair price in the sense of long-period or normal

most cases, furthermore, it was not the high cost producer's investment but the average investment that was

price (an assumption of which more will be said presently) the answer would be, marginal cost if the differences in cost arise from causes in nature, but average cost (or something like it) if they arise from differences in managing ability. The marginal producer, if in that position because he is the least capable person, is not the one whose conditions of production are decisive. Such a producer as has just been intimated, is probably in process of disappearing. He will disappear very soon in times of depression, will drop out gradually and haltingly in ordinary times, will hold his own with deceptive prosperity and success in periods of strong demand and unusual general profits. He is not a representative producer: not a person whose operations determine the long-period price range."

First, Professor Taussig in this place chooses to define the marginal producer — and this is for long periods — as the producer who drops out, or who may be expected to drop out. It is just as possible and probably advisable to define him as the producer who just stays in. The producers who drop out might well be called the flotsam and jetsam of economic life, and the producers who do not drop out might be called the "marginal or price-determining producers." A definition of the marginal producer as the producer who is able to keep on producing from year to year may or may not exclude the highest cost producers of the price-fixing period. It would be easy to determine just in how far the highest costs of the price-fixing period were the costs of the "fly-by-nights." Professor Taussig says "it would not be in accord either with current economic theory or with business experience to give to the least efficient manager (even if the extreme cases or "freaks" be disregarded) a dominant price-determining position. The representative firm (wherever in the scale it is to be found) is in that position." To say that the marginal cost principle gives the least efficient producer a dominant price-determining position is very much like saying that the last of the ten men pushes the stone.

Second, the Price-Fixing Committee apparently used the weighted arithmetic average cost, which it seems difficult to justify. When he argues for the average cost (or something like it) he is probably arguing for the modal cost. The correspondence of the arithmetic average and the mode would assume the dispersion of a normal frequency curve, to which cost data often do not conform. In other words, the average cost may be a very artificial figure, and may not be the cost of the representative producer at all.

Professor Taussig's distinction between the two causes for cost differences—the physical and the human—constitutes probably the most important part of his discussion. Obviously it would be difficult to determine in how far natural causes and in how far human abilities were responsible for the particular positions of producers in the cost relation. To determine the comparative importance of ineradicable differences in soil or ore bodies, of engineering efficiency, of fortuitous success or mishap, of good or bad plants and equipment would be difficult, perhaps even impossible in many cases, as Professor Taussig would be willing to admit. However, if it could be assumed, as he seems to imply, that the cost relations of mining products are more affected by physical causes, and the cost relations of manufactured products by human ability, certain questions arise. He believes that the several mines would stand in somewhat the same cost relation to each other from year to year, but that manufacturers would not. He is apparently more convinced of constant differences in soil fertility, etc., than in human ingenuity. But even if this were so, the marginal manufacturer might be a red-haired man one year and a black-haired man the next year, and yet the marginal cost might not be changed. He admits that the marginal cost may not shift appreciably, even tho there be shifts of the producers who are incurring it. "After all in any set of concrete facts, anywhere and at any time, we cannot expect to find more than approximations to economic normality" are Professor Taussig's words. It is more a matter of marginal product and marginal cost than of marginal producer. Whether the high-cost manufacturers tend to disappear more rapidly than the high-cost miners is another question, and is dependent upon the particular conditions of demand. It is probably as common

employed for calculating the margin above cost. Indeed, the common practice of the most thoughtful of the price-fixing agencies was the addition to the average cost or the high cost of a margin representing a percentage of the average investment. This return was supposed to represent a combination of interest and profit. Thus, profit was assumed to bear a definite relation to investment.

Few tenable theories of profit consider that the profit of any one entrepreneur has anything to do with his investment. Economists would immediately recognize that the foregoing analysis — in which price was considered the sum of the high cost producer's cost and interest on his investment — assumes Francis A. Walker's theory of profit. It was, of course, necessary to assume some theory of profit. One of the most important reasons for price fixing, as has been explained, was the prevention of profiteering. In some few cases a minimum price was fixed so as to guarantee the producers a certain profit, but this was not the usual practice. At a time when the abnormal conditions of demand and the peculiar limitations on supply allowed producers to reap a profit which was unjustifiably large, price fixing was found necessary in order to restrict rather than to guar-

for mines to be closed up as for manufacturing establishments to be shut down. Indeed, if the law of increasing return can be assumed for manufacturing operations, and the law of decreasing return for mining operations (and this is no forced assumption), in the face of an increasing demand and an increasing price the marginal manufacturing costs would theoretically be somewhat more stable from year to year than the marginal mining costs. Of course, it cannot be assumed that because we have had rising prices that we have had a general increased demand for all products; and, with the assumption of a decreased demand, marginal mining costs would theoretically be less affected than marginal manufacturing costs. It might be interesting to note, furthermore, that the choice of the marginal cost for industries where profit arises from artificial advantage and the choice of the average cost where man is responsible for his gain seems to penalize ability, unless it is believed that the entrepreneur should be rewarded for having discovered or utilized the better natural resources.

Finally, Professor Taussig's charts and figures probably represent costs exclusive of interest, altho he does not state this explicitly. This is a matter of considerable importance, as the apparently inefficient producers may be operating with a very small investment per unit of product, and may not be high cost producers at all, if their interest on investment be taken into consideration.

antee profits. To a large extent, then, price fixing was profit regulation. When the producer's cost was used as a basis for price fixing, all of the factors of production, with the exception of the entrepreneur, were given practically what the free competitive market enabled them to get. No theory of wages or of rent was necessary in a cost analysis. The cost accountant allowed as much of these elements in cost as was actually paid. But, inasmuch as price fixing presupposed profit determination, some theory of profit was indispensable.

At this point it seems necessary to discuss the theory of profit — particularly in its relation to price fixing.

III

The economist is called upon to answer certain fundamental questions in formulating a theory of the entrepreneur and of profit. First, the economist must determine who the entrepreneur is and what he does, i. e., his place in production. Second, he must explain how profit comes about and how the different rates of profit arise, i. e., the entrepreneur's share in distribution. Third, the economist must justify (or make clear that there is no justification for) profit. In the third part of the theory of profit, it must be proved that what the entrepreneur does is worth what he gets; a mere explanation of how profit arises does not constitute a social justification for its existence.

The theory of profit was developed late in the history of economic thought. The entrepreneurial function and its importance in modern industrialism was perhaps first clearly set forth by Francis A. Walker. The period between Walker and the modern theorists, Clark, Schumpeter, and Davenport — who seem to consider the entrepreneur the pivot on which production and dis-

tribution hinge — has been filled with theories of profit. Walker's theory of profit showed an advance over the earlier theories both because he attempted to analyze the peculiar service of the entrepreneur and because he attempted to explain the rate of profit. The industrial experience with which Walker was familiar undoubtedly helped him to formulate his theory of the entrepreneurial function. Walker saw that the rate of profit was not fixed or stable but varied for different entrepreneurs just as rent varied for different pieces of land. He saw that profits were the differentials existing between costs and prices and naturally varied inversely with costs (producers' or accountants' costs). He contended that the cost of the marginal entrepreneur, i. e., the no-profit entrepreneur, fixed the price that prevailed in the market.

Altho Walker recognized the entrepreneurial function, many of the later economists were not entirely satisfied with his description of that function or with his justification for profit. Walker apparently believed that the coördinating, directing effort of the entrepreneur, who managed to keep his cost below the marginal cost, was a sufficient justification for profit. In other words, the ability of an entrepreneur to be a (relatively) low cost producer was both the reason for and the measure of profit. Walker insisted that it was efficiency or ability rather than artificial advantage that explained the (relatively) low cost producers; in this way he answered the socialistic exploitation theory of profit.

J. B. Clark's theory of profit offers no real justification for pure profit. Clark considered the entrepreneur a composite person, who performs two unlike functions and receives two distinct rewards. In his first capacity, he is a directive laborer, whose compensation is in the nature of wages; in his second capacity, he is a buyer

and seller, who owns the product and who makes a profit by selling it.[1] In this capacity he apparently does little to earn the profit.

> The reward of the entrepreneur in his capacity as owner of a product comes to him as rain from the clouds, through the action of forces lying beyond the range of his dominant influence. He has nothing to do but to receive it. He must accept what comes into his treasury, and submit to what goes out of it; the difference, which is pure profit or loss, is fixed without appeal.

Hawley subscribed to Clark's belief in the ownership of the product as the peculiar function of the entrepreneur, but Hawley insisted that profit is earned because of the risk inherent in the ownership of the product. He took great pains to distinguish between the risk inherent in the use of the capital and the risk inherent in the ownership of the product. The coördinating or directing ability of the entrepreneur, he thought, earns him wages but not profit. "A farm hand," wrote Hawley, "who suggests that something be done on a farm and is told to go ahead and do it earns wages and not profit."

These three theories of profit are probably the most original contributions to the subject made by American economists.[2] It is interesting to consider how they answer the three fundamental questions which the theory of profit must answer. Walker believed that the entrepreneur was the director of the organization. Clark and Hawley, however, considered that his essential function was the ownership of the product. Walker asserted that profit arose when the entrepreneur produced at a cost lower than that of the marginal producer. Clark offered no justification for pure profit. The entre-

[1] It is important to note in this connection that the accountant allows the directive laborers' salaries, which are included in cost.

[2] It is regretted that the scope of this paper does not admit of a discussion of some of the other important theories of American economists — e. g., Carver, Davenport.

preneur, as directive laborer, received a wage. But the entrepreneur, as owner of the product, received profit or loss as rain from heaven; he was the beneficiary of dynamic changes. Hawley attempted to justify profit by emphasizing the risk inherent in the ownership of the product.

A description of the entrepreneur and of his function must take into consideration the fact that in most modern business organizations "the stockholders of a corporation as a group ultimately form its entrepreneur, and the bondholders merely supply the capital factor." [1] Of course, the distinction between a stockholder and a bondholder is often hard to recognize. The investor who buys a few shares of common stock performs no very different function from the investor who buys a bond. Both supply the corporation with capital; neither have any very real control. The stockholder theoretically has a small amount of control and the bondholder has a certain amount of contingent control. The stockholder, however, expects a higher return, at least during certain periods, apparently because the claim of the bondholder on the income of the corporation is prior and more secured. The hybrids, income bonds and preferred stocks, illustrate the difficulty in drawing hard and fast distinctions between stocks and bonds.

It might be important to draw a distinction between two classes of stockholders: (1) the stockholders who buy for investment; (2) the stockholders who own a sufficient amount of the stock to exert a real control. The investing stockholders furnish capital, and are not very different from bondholders except that they take a larger risk. They perform no real entrepreneurial function

[1] See Haney's "Business Organization and Combination," p. 8. The Macmillan Co., New York, 1913.

except in a vague indirect way. The second class of stockholders constitute the entrepreneur. Their return may be no different from the return of those in the first class, but the justification for it is very different. The fact remains, however, that the body of stockholders, or a part of the body acting through the directors, is ultimately responsible for the success of the corporation. They direct and control their organization in the same sense that the American people direct and control their government. The administration of a country actually directs it, but the administration is responsible to the people. The laborer, as Hawley insisted, may have a part in the direction of policy, but he is ultimately responsible to the entrepreneur or stockholders. The efficiency engineer, as Veblen suggests, may deserve the credit for a low cost of production, but he is employed and discharged by the directors, who in turn are responsible to the stockholders.

The control of the corporation ultimately rests in the hands of the entrepreneur. The ownership of the product, furthermore, is another of his functions. An entrepreneur may have many functions, but it is important to define his essential functions in order to justify profit. The shoe repairer, for example, who might conceivably own his own land, shop, and capital, and who might hire no laborer thinks of his entire selling price as profit. A highly developed economic theory, however, would analyze the functions of such a shoe repairer as follows: landowner, capitalist, laborer, owner of the product, and director. The function of the director might be divided and subdivided. From this point of view the classification of the factors of production as three or four clearly defined units may seem a misleading simplification. There are a great many factors which enter into production even tho all of them may be embodied in one

person—as in the case of the shoe repairer. The economist, however, can only deal with the essential forces which function in the productive process, and usually attempts, for practical purposes, to identify these forces with definite and existing classes of persons. The economist, thus, does well to disregard or to subordinate the less essential functions of the different factors of production. The essential functions of the entrepreneur are the direction of policy and the ownership of the product.

The second problem that confronts the economist is the explanation of how profit comes about and how different rates of profit arise. Certainly, the direction of policy and the ownership of the product do not explain the existence of profit. The entrepreneur may direct the corporation, own the product, and yet earn no profit. Profit arises when the entrepreneur buys or produces more cheaply than he sells. Altho there are different kinds of profits ranging from profit on real estate transfers to jobbing profit and manufacturing profit, profit arises when the entrepreneur, as director of the undertaking and owner of the product, sells at a higher price than he buys or produces. In a competitive market for a standardized article under normal conditions (i. e., when neither demand nor supply is abnormally great or small) price tends to be equal to the marginal cost of production and profit is, therefore, a differential between the marginal cost and other costs. But when there is no competition (as in the case of monopolies), or where there is no standardization (as in the case of some classes of real estate, or some articles advertised as "specialities"), or when demand and supply are abnormal (as in the period during the war), price varies widely from the marginal producer's expense and profits or losses bear no relations whatsoever to costs of production.

The explanation of how profit arises may constitute no social justification for it. The entrepreneur's function in production must justify or fail to justify his share in distribution. The theories of Walker and Hawley represent two different methods of justifying the entrepreneur's claim to profit. Walker's theory, however, explains how different entrepreneurs are entitled to different rates of profit, whereas Hawley's theory does not. In a competitive market or in a price-fixed market where price is approximately equal to the cost of the marginal producer, profit is earned by an entrepreneur when his cost is kept beneath that of the marginal producer and the amount of his profit is determined by the extent to which he can reduce his cost. This represents Walker's justification for profit.

Hawley attempts to justify the entrepreneur's profit by the risk inherent in owning the product. There seems to be no risk in ownership, *per se*, that would warrant compensation. The risk in the ownership of the product can be analyzed into two parts: the risk inherent in the possibility of not getting profit, and the risk of losing the capital or a part of the capital invested in the product. With respect to the first kind of risk, no factor in production is absolutely assured of a share in distribution. This is true of the laborer, altho it is more conspicuous in the case of the capitalist and landowner. If an entrepreneur were to be compensated according to the risk he ran of getting profit, the most inefficient entrepreneurs could expect the highest rate of profit. With regard to the second kind of risk, Hawley acknowledges that this is a capitalist's risk and not an entrepreneur's risk. If the entrepreneur uses his own capital, he takes a risk as capitalist and not as entrepreneur. If he borrows his capital, the lender takes the risk. The risk inherent in the ownership of the product

offers no sufficient justification for profit nor does it explain the variations in profit. The justification for the varying yields on capital due to different degrees of risk has been generally recognized. The capitalist does not only take the risk of not getting interest but he stands the chance of losing his capital, i. e., the source of his income. When a laborer is paid a high wage in a dangerous occupation, he is compensated for the risk of losing his life or limb and not for the risk of losing his wage.

A qualification of Walker's theory of profit represents the most satisfactory theory that has been evolved. Profit is justified because the entrepreneur directs or is responsible for production which is more efficient than the marginal production. There are two factors, however, which Walker's theory either neglected or failed to emphasize. First, profit often results from artificial advantage rather than efficiency. Second, the higher prices obtained by expensive sales organizations for advertised articles, which represent no exceptional quality, result in profits which cannot be justified by any claim of productive efficiency.

Walker's theory of price and profit enabled the construction of a price-fixed market which could approximate a normal competitive market. To future estimated unit costs, based on the accountant's cost analysis, it was only necessary to add interest and the risk premium for the use of capital. The amount of pure interest should have been small — probably about 3 per cent or 4 per cent. The risk premium would have had to be determined in each particular case by the price-fixing agency. Such risk premiums should have varied for different producers and for different industries. Past stability of earnings or other criteria might have been employed for the determination of percentages to be allowed for risk.

After adding interest and the risk premium to all the costs obtained, the marginal cost should have been chosen to represent the price. This marginal cost would have represented Walker's marginal producer's expenses or marginal cost of production. In some cases, in order to insure the production of the marginal producers, it was necessary to add a margin above cost (including interest and the risk premium). But this margin was not a profit but a margin justified by expediency, for the marginal producer was entitled to no profit.

Even when the price-fixing agencies used the accountant's marginal cost (in which no interest was included) — they usually allowed a return of 10 per cent or 15 per cent on the average investment rather than on the investment of the marginal producer. This method was the result of certain misconceptions or of an unwarranted assumption. First, the marginal producer was allowed interest on the average investment rather than on his actual investment. Second, profit and interest were supposed to be covered by the return on investment. Such a measurement of profit in terms of investment was the result either of the misconception that profit is paid for the risk in using capital or the unwarranted assumption that there is for every producer an established rate of profit that represents a certain percentage of his investment. Thus, it was assumed that the ratio of profit earned on investment by the high cost producers would tend to be equal to the ratio of profit earned on investment by the low cost producers. This assumption implied that all entrepreneurs had about the same ability—an implication both untrue and dangerous. No theory of profit should have failed to take into consideration individual assiduity and intelligence. An entrepreneur's ability to be a low cost producer did not depend entirely upon his investment.

IV

The proper application of the cost method of price fixing enabled an ideal approximation to a normal competitive market. Misapplications of this method, however, were numerous and unjustifiable.

The post-production method of fixing a separate price for each manufacturer may have limited profit but it encouraged extravagant reward for the other factors of production. In ante-production price fixing, where a single price was set for the industry, the exclusion of interest from cost and the use of the average investment for the determination of the margin above cost was based on a confusion of interest and profit. The accountant's misconception of profit should be corrected in that the business man depends largely upon him in the matter of price determination. The accountant's misconception of profit constitutes a future danger especially in those industries where a few of the most important producers fix prices. Such producers could be expected to take particular interest in the accountant's cost analysis. Of course, such price fixing should be declared illegal. A mere understanding of the nature of profit should show clearly that the costs of one producer or small group of producers do not constitute a sufficient basis for price determination.

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DEBTS, REVENUES AND EXPENDITURES AND NOTE CIRCULATION OF THE PRINCIPAL BELLIGERENTS

SUMMARY

I. Public Debts, 161. — II. Revenues and Expenditures, 169. — III. Note Circulation, 179.

I. Public Debts

Since the beginning of the war sixteen of the belligerent countries have contracted new obligations to the extent of $212,268 millions or $329.91 per capita. The contribution of Allied countries to this total is $149,357 millions or $300.85 per capita, and that of the Central Powers, $62,911 millions or $428.05 per capita. In the same period of time, the annual requirements of the debt have increased $8,217 millions or $12.77 per capita, representing a charge against the combined national income to the extent of eight and one-half times its pre-war proportions. Of this amount, $5,099 millions or $10.28 per capita is assessable against the Allied Powers, and $3,118 millions or $21.22 per capita against the Central Powers.

The distinction of having the lowest per capita debt of all the belligerents during the pre-war period falls to the United States. At the most recent date, Great Britain leads all its allies and associates as well as its former opponents in per capita indebtedness; France comes next, with New Zealand and Italy closely following. In the group of Central Powers, Germany occupies the unique position of having both the lowest per capita

debt at the outbreak of the war and the highest per capita debt among its allies at the present time.

A rough comparison of the per capita debt of the principal belligerents at the outbreak of the war and at the most recent date indicates the following approximate increases: Germany, thirty-threefold; United States, twenty-onefold; Great Britain and Russia, tenfold; Austria and Hungary, fivefold; and France and Italy, fourfold. Only one nation has emerged from the great conflict unscathed financially, namely, Japan.

The summary on page 164 presents figures relating to the public debt of sixteen countries. In using the data, it should first be remembered that all amounts are gross and that, therefore, duplication exists, the elimination of which would reduce the aggregate approximately $22,950 millions. The loans of belligerent powers to their allies and associates are reflected in expenditures and hence in the public debt, and no allowance is made therefor in the statement of gross indebtedness. That these advances are of no small consequence may be observed from the following figures: United States (to September 2, 1919),[1] $9,684 millions; Great Britain (to March 31, 1919), £1,739 millions or $8,463 millions;[2] Japan (to September 1, 1918), 1,152 million yen or $574 millions; and France (to May, 1919), 12,500 million francs or $2,413 millions.[3] The debt of Austria and Hungary to Germany was reported as 4,500 million crowns to the end of 1917 or $914 mil-

[1] Distributed as follows (millions of dollars): Belgium, 343; Cuba, 10; Czechoslovakia, 55; France, 3,048; Great Britain, 4,316; Greece, 48; Italy, 1,619; Liberia, 5; Rumania, 25; Russia, 187; Serbia, 27. These are credits established. Cf. New York Times, September 12, 1919.

[2] Divided as follows (millions of pounds): Russia, 568; Dominions, 171; France, 434; Italy, 413; Belgium, 87; Serbia, 19; others, 47. Parliamentary Debates, House of Commons, April 30, 1919, vol. 115, No. 52, pp. 106 et seq.

[3] As stated by M. Klotz, Minister of Finance, London Economist, June 7, 1919, p. 1046. Consists of advances, 7,250 million francs, and materials, 5,000 million francs.

lions,[1] and the amounts advanced to Bulgaria by Germany totaled 2,640 million francs, or $510 millions.[2] Turkey received assistance to the extent of $370 millions from Germany and $10 millions in gold from Austria and Hungary.[3]

Another consideration to be borne in mind is the reparations which the Allied Powers will exact from Germany and its allies. This circumstance will operate to reduce appreciably the debt of some of the Allied belligerents and shift the burden to their defeated opponents.

Of greater importance than the reduction of gross debts to a per capita basis is the relation of national wealth to public indebtedness, on the one hand, and of national income to debt charges, on the other. Both wealth and income determine the ability to stand the financial strains caused by the war. Unfortunately official figures of national wealth and income at the present time are lacking and pre-war estimates only are available, which are more or less reliable but incomparable because the theories behind them are at variance. For rough comparative purposes, however, these estimates afford a basis from which to judge the financial standing of the principal belligerents at the present moment.

Before the war, the national wealth of the twelve belligerent countries specified in the table below was mortgaged to the extent of 4.84 per cent and the debt charges amounted to 1.29 per cent of the national income. At the most recent date for which statistics are available, the debt expressed as a percentage of pre-war national wealth increased to 41.45 whereas the debt

[1] L'Economiste Français, March 30, 1918, pp. 288, 289. A credit of 100 million marks was established monthly, of which 63.6 per cent went to Austria and 36.4 per cent to Hungary.

[2] Stock Exchange Gazette, April 10, 1919, p. 446.

[3] Journal des Economistes, June 15, 1919, pp. 322–324.

SUMMARY OF PUBLIC DEBTS OF PRINCIPAL BELLIGERENTS[39]

(Million dollars)

A. *Allied Powers*

Country	Before entering the war					
	Population[1] (thousands)	Date	Debt	Annual debt charges	Debt per capita (dollars)	Debt charges per capita (dollars)
United States...	106,653	Mar. 31, 1917	1,208	23[2]	11.33	0.22
Great Britain...	46,089	Aug. 1, 1914	3,458	119[7]	75.03	2.58
Canada.....	8,361	Mar. 31, 1914	336[23]	13[23]	40.19	1.55
Australia.....	4,971	June 30, 1914	93[39]	3[23]	18.71	0.60
New Zealand...	1,162	Mar. 31, 1914	446[39]	13[39]	383.82	11.19
France.....	39,700	July 31, 1914	6,598	252[8]	166.20	6.35
Italy.....	36,717	June 30, 1914	3,031[3]	103[3]	82.55	2.81
Japan.....	57,998	July 31, 1914	1,261[9]	54[9]	21.74	0.93
Russia.....	182,183	Jan. 1, 1914	5,092	218[39]	27.95	1.20
Belgium.....	7,658	Jan. 1, 1914	722[11]	25[39]	94.28	3.26
Greece.....	4,950	Dec. 31, 1913	189[3]	8[3]	37.98	1.62
Total.....	496,442	.....	22,433	831	45.19	1.67

B. *Central Powers*

Germany	67,812	Oct. 1, 1913	1,165[4]	42[4]	17.18	0.62
Austria.....	30,958	Aug. 1, 1914	2,631[39]	101[12]	84.99	3.26
Hungary.....	21,410	Aug. 1, 1914	1,602[39]	53[39]	74.82	2.48
Turkey.....	21,274	Mar. 31, 1914	667	45[14]	31.35	2.12
Bulgaria.....	5,518	July .., 1914	171[5]	8[5]	30.99	1.45
Total.....	146,972	.....	6,236	249	42.43	1.69
Grand total ..	643,414	.....	28,669	1,080	44.56	1.68

[1] In 1918 or on latest available date. Statistical Abstract of the United States, 1918, p. 842.

[2] According to Riccardo Bachi, "L'Italia Economica nel 1917," Revue Financière et Economique d' Italie, February, 1919, pp. 30–32.

[3] Includes currency debt of $33,841,000. Cf. Statesman's Yearbook, 1916, p. 989.

[4] Statistisches Jahrbuch für das deutsche Reich, 1915, p. 359.

[5] Statesman's Yearbook, 1916, p. 761. Interest charges include an estimated amount for interest at 4 per cent on treasury bills.

[6] Interest for the year ended June 30, 1916. Statistical Abstract of the United States, 1918, p. 672.

[7] Cf. Bulletin de Statistique et de Législation Comparée, April, 1919, pp. 783 et seq. Interest at most recent date covers debt charge of £269,964,000 as estimated by the Chancellor of the Exchequer for 1919 plus 4 per cent interest on the new loan, recently floated, of £539 millions. Cf. London Economist, July 26, 1919, p. 124.

[8] Statesman's Yearbook, 1916, p. 868.

[9] Japan Financial and Economic Monthly, September, 1914, p. 49.

[10] Statesman's Yearbook, 1916, p. 1293. Actual interest for 1913.

[11] Statesman's Yearbook, 1919, p. 692.

[12] Ibid., 1915, p. 689. Actual interest for 1913.

[13] Ibid., 1915, p. 702. Estimated for 1914–1915.

Summary of Public Debts of Principal Belligerents

(Million dollars)

A. *Allied Powers*

Country	At most recent date				
	Date	Debt	Annual debt charges [41]	Debt per capita (dollars)	Debt charges per capita (dollars)
United States	Aug. 31, 1919	26,597[13]	904[37]	249.38	8.38
Great Britain	July 26, 1919	37,657[14]	1,421[7]	817.04	30.83
Canada	Mar. 31, 1919	1,584[29]	115[29]	189.45	13.75
Australia	Dec. 31, 1918	1,619[31]	50[29]	325.69	10.06
New Zealand	Mar. 31, 1918	734[34]	22[34]	631.67	18.93
France	Mar. 31, 1919	30,494	1,930[34]	768.11	48.61
Italy	May 30, 1919	15,009[17]	577[17]	408.78	15.71
Japan	Mar. 31, 1919	1,284[15]	52[29]	22.14	0.90
Russia	Aug. 31, 1919	54,402[19]	766[23]	298.61	4.20[39]
Belgium	April 1, 1919	1,889[11]	85[29]	246.67	11.10
Greece	Mar. 31, 1919	521[20]	18[21]	105.25	3.64
Total	.....	171,790	5,930	346.04	11.95

B. *Central Powers*

Germany	Sept. 30, 1919	40,007[24]	2,201[21]	589.97	32.46
Austria	Oct. 31, 1918	17,071[22]	622[22]	551.42	20.09
Hungary	Oct. 31, 1918	8,909[22]	347[21]	416.11	16.21
Turkey	Aug. 31, 1918	2,002[25]	88[29]	94.11	4.14
Bulgaria	Mar. .., 1919	1,158[24]	109[29]	209.86	19.75
Total	.....	69,147	3,367	470.48	22.91
Grand total	.....	240,937	9,297	374.47	14.45

[13] For the year ended March 31, 1915. Statesman's Yearbook, 1915, p. 1398.
[14] New York Times, September 4, 1919.
[15] London Economist, August 2, 1919, p. 178.
[17] According to an official statement made by the Minister of Finance on July 10, 1919. Cf. L'Economiste Européen, July 18, 1919, p. 43, and London Economist, July 26, 1919, p. 136.
[19] Japan Financial and Economic Monthly, April, 1919, p. 18.
[19] Includes 56,346 million rubles of currency notes estimated as issued by the Bolsheviki from October 25, 1917 to August 31, 1919. See text, infra.
[20] L'Economiste Européen, April 11, 1919, p. 228.
[21] As estimated by Dr. Dernburg, Minister of Finance. Berliner Zeitung, May 3, 1919.
[22] L'Economiste Européen, February 14, 1919, p. 110. Official figures.
[23] Ibid., May 30, 1919, p. 340.
[24] Ibid., May 9, 1919, p. 293. Official statement by Minister of Finance Daneff.
[25] L' Economiste Européen, March 14, 1919, p. 175.
[26] As stated by M. Klots, Minister of Finance. London Economist, June 7, 1919, pp. 1045 et seq.
[27] Gazetta Ufficiale del Regno d' Italie, May 8, 1919, and L'Economiste Européen, June 13, 1919, p. 370.

charges as related to pre-war national income rose to 11.21.

Of all the twelve nations, the United States shows the smallest percentage of mortgaged wealth before the war, while Germany, as in its per capita indebtedness, holds the same record with reference to the group of Central Powers. Turkey's pre-war debt expressed in terms of national wealth heads the list of all countries and Italy holds the leading position in the Allied group.

At the most recent date, Turkey falls to third place among the Central Powers, with Austria at the head and Hungary second. Of all the powers (save Japan), Belgium shows the lightest effects of the war and if Russia is excluded, Italy still retains the highest ratio in the allied group, excelled only by Austria as far as the other nations are concerned.

With respect to interest and other debt charges as related to national income, the ratio is of prime significance in so far as the foreign debt is involved. Payment of these charges by any nation entails the transfer of a portion of its income elsewhere and affects its ex-

[30] Estimate of M. Todorov. L'Economiste Européen, February 22, 1918, p. 126.

[31] This table represents in essential parts a revision of figures given in a previous article (Quarterly Journal of Economics, May, 1919). Wherever no references are made, the reader is kindly referred to this previous article for sources of information. The rates of conversion into dollars are as follows: 1 lira or franc = 19.3 cents; 1 pound = $4.8665; 1 mark = 23.8 cents; 1 ruble = 51.5 cents; 1 Austrian crown = 20.3 cents; 1 Turkish pound = $4.40; 1 yen = 49.85 cents; 1 Greek drachma = 19.3 cents; 1 Bulgarian leva = 19.3 cents.

[32] Interest charges as computed for the year ended March 31, 1918. Inasmuch as the public debt has undergone but a slight change in the fiscal year 1919, the interest charges for 1918 may be taken as fairly representative for the current year.

[33] Debt service for 1918. Statistical Abstract of the United States, 1918, p. 846.

[34] Estimated by the writer on the basis of a foreign debt of £925 millions (cf. Annual Report of the Corporation of Foreign Bondholders, 1918, p. 282) and an internal debt of 24,085 million rubles (cf. Le Monde Economique, August 2, 1919, p. 473). No interest is included on the amount of currency notes issued by the Bolsheviki.

[35] According to the Budget speech of Sir Thomas White on June 5, 1919. Cf. Monetary Times, June 6, 1919, pp. 26–35.

[36] Statesman's Yearbook, 1919, pp. 410, 411.

[37] Quarterly Summary of Australian Statistics, December, 1918, p. 84.

[38] Computed by the writer.

[39] Estimated interest charges for 1920, exclusive of provisions for amortization or redemption. Statesman's Yearbook, 1919, p. 446.

[40] Statesman's Yearbook, 1917, p. 414.

[41] Official Year Book of the Commonwealth of Australia, No. 10, pp. 746–748.

[42] Estimated at the rate of 4½ per cent.

[43] Includes charges for amortization and redemption wherever provision has been made therefor. In the case of practically all the principal belligerents the figures in these columns represent interest charges only.

change situation adversely. That the debts held in foreign countries assume considerable proportions appears from the figures presented above on the advances by allied and associated governments. But to these amounts there must be added loans floated and credits furnished by private individuals and banking institutions abroad. The total foreign debt of Great Britain on March 31, 1919 was $6,570 millions;[1] that of France on March 31, 1919, approximately $5,211 millions;[2] and the foreign debt of Italy on May 30, 1919, about $3,669 millions.[3]

The ratio of debt charges to national income also serves as an index to the proportion of annual income that must flow into the coffers of the government in the shape of taxes. So far as the national income is concerned, the process may be described as taking money from one pocket and putting it into another; but so far as individuals or classes of individuals are concerned, the problem is of great moment. For example, in the United States where the personal income, corporation, and excess profits taxes are the pillars of government finance and where the average workman is little affected by their operation, the present interest charge is in effect an agency which helps to redistribute the national income. The government takes out of the pockets of the tax-paying classes funds in the form of taxes and distributes them in the shape of interest among the holders of bonds, consisting to an appreciable extent of the untaxed classes. The ratio of debt charges to national income measures the relative burdens of future taxation.

[1] Parliamentary Debates, House of Commons, April 30, 1919, vol. 115, No. 52, pp. 106 et seq.

[2] As stated by Finance Minister Klots on May 27, 1919, London Economist, June 7, 1919, p. 1045.

[3] As stated by the Minister of Finance on July 10, 1919, London Economist, July 26, 1919, p. 136.

The following table gives the details with respect to twelve countries.

FINANCIAL STANDING OF PRINCIPAL BELLIGERENTS

(Million dollars)

A. *Allied Powers*

Country	Pre-war national wealth[1]	Pre-war national income[1]	Before entering the war		At most recent date	
			Debt as percentage of national wealth	Debt charges as percentage of national income	Debt as percentage of national wealth	Debt charges as percentage of national income
United States	204,400	35,300	0.59	0.07	13.01	2.53
Great Britain	69,600	11,000	4.97	1.08	54.10	12.92
France	58,500	6,000	11.28	4.20	52.13	32.17
Italy	22,800	4,000	13.29	2.58	65.83	14.43
Japan	11,700	1,700	10.78	3.18	10.97	3.05
Russia	60,000[2]	6,500	8.49[2]	3.35	90.67[2]	11.78
Belgium	15,000	1,300	4.81	1.92	12.59	6.54
Total	442,000	65,800	4.83	1.21	37.86	8.70

B. *Central Powers*

Germany	80,500	10,500	1.45	0.40	49.70	20.96
Austria	23,500	2,400	11.20	4.21	72.64	25.92
Hungary	16,500	1,400	9.71	3.79	53.99	24.78
Turkey	4,000	500	16.68	9.00	50.05	17.60
Bulgaria	4,000	500	4.28	1.60	28.95	21.80
Total	128,500	15,300	4.85	1.63	53.81	22.01
Grand total	570,500	81,100	4.84	1.29	41.45	11.21

[1] The figures submitted herein are based on estimates by Dr. Stamp in a paper "Wealth and Income of the Chief Powers," read before the Royal Statistical Society. (cf. London Economist, May 24, 1919, pp. 958, 959); on the estimates of Professor Bogart for the Carnegie Foundation for International Peace; and War Finance Primer, issued by the National Bank of Commerce of New York City, May, 1917. The figures, tho based more or less on conjecture, serve a useful purpose, however, in comparative studies and for this reason the relation is here drawn between national wealth and debt on the one hand, and national income and interest charges on the other.

[2] Figures have reference to European Russia only.

II. Revenues and Expenditures

The largest degree of flexibility in receipts from taxation during the period of the war is shown by the United States, with Great Britain following closely. Of the seven countries compared in this section, Germany shows the poorest record up to the end of 1916. Here the influence exercised by an overconfident military clique had its telling effect on the taxation policy during the first two and one-half years of the conflict. Only as the militarists became slowly reconciled to the fact that the victory of German arms was still a far distant dream and that indemnities could more easily be contemplated than imposed did a change in the fiscal policy of the German empire appear more and more necessary, if bankruptcy was to be averted.

The income tax has proved to be the bulwark of British and American war finance. This source of revenue augmented by the taxation of excess profits accounts for the greater part of the increase in revenue receipts in these countries. While in France and Italy the taxation of excess profits was introduced in slightly different forms, it has failed to become so lucrative as in the United States and Great Britain. In Germany the war profits tax began to produce results for the first time in 1917 and was mainly responsible for the rise in revenue from 2,029 million marks in 1916 to 7,830 million marks in the following year.

The increase in tax receipts during the latest full fiscal year for which data are available as compared with the fiscal year immediately preceding the war shows the following percentages: United States, 569.6; Great Britain, 380.2; Germany, 283.7; Italy, 124.9; Canada, 85.7; Japan, 30.8; France, 26.5. In Germany, this in-

crease took place wholly in 1917. In the fiscal years 1915 and 1916, the revenue declined considerably, and altho new taxes were enacted in the fall of 1916, they failed to stem the tide, for the total receipts were less than in 1913 or 1914. The war profits tax, the tax on coal and sales, increased duties on cigarettes and higher export duties were the principal factors in making it possible to almost quadruple the revenues for 1917 as compared with 1916.

A study of the emphasis placed on direct taxes as contrasted with indirect taxes discloses interesting facts, irrespective of whether the distinction is any longer of significance from the point of view of fiscal theory. In Great Britain, the ratio of direct taxes to total receipts from taxation, expressed as a percentage, rose from 44.8 in the first eight months of the war to 73.9 in the fiscal year 1919; in the United States, from 12.8 in the fiscal year 1915 to 67.1 in the fiscal year 1919; in Japan, from 34.5 in the fiscal year 1914 to 43.6 in the fiscal year 1919; and in Italy, from 41.2 in the fiscal year 1914 to 51.1 in the fiscal year 1918. In France, the ratio fell from 35.6 in the last five months of 1914 to 27.9 in 1915 and 24.2 in 1916; in 1917, it rose to 26.2 and in 1918, again to 32.3. In the case of Germany, the imperial government had always relied mainly on indirect taxation, and not until 1917 did it enter the field of direct taxation by introducing the tax on war profits, coal, and sales.

The relation of receipts from taxation to expenditures is of great significance, since it determines the fiscal burden to be borne by future generations. The following summary shows the receipts from taxes; total expenditures; and the ratio of the former to the latter, including and excluding loans to associated and Allied nations, as far as data are available.

Summary of Receipts from Taxation and Expenditures during the War [5]

(Million dollars)

Country	Period covered	Total receipts from taxation	Total expenditures	Loans to co-belligerents	Ratio of receipts from taxation to expenditures	Ratio of receipts from taxation to expenditures exclusive of loans
United States	April 6, 1917–June 30, 1919	8,400	32,428	9,102[8]	25.9	36.0
Great Britain	Aug. 1, 1914–Mar. 31, 1919	11,439	46,385	8,464	24.7	30.1
France	Aug. 1, 1914–Jan. 1, 1919	3,998	25,961	2,413	15.4	17.0
Italy	Aug. 1, 1914–June 30, 1918	1,684[1]	11,291[1]	.....	14.9	14.9
Germany	Aug. 1, 1914–Jan. 1, 1919	4,046[2]	36,795[3]	2,261	11.0[4]	11.7[4]
Japan	April 1, 1914–Mar. 31, 1919	907	1,602	.....[6]	62.2	.....[7]
Canada	April 1, 1914–Mar. 31, 1919	826	2,183	.....[6]	37.8	.....[7]

[1] Includes eleven-twelfths of the fiscal year ended June 30, 1915.

[2] As stated by Dr. Dernburg before the Berlin Chamber of Commerce. Berliner Zeitung, May 3, 1919. This amount is the total revenue but inasmuch as the great bulk of imperial revenues was derived from taxation, this figure is more or less comparable with others in this column.

[3] According to Dr. Schiffer, erstwhile Minister of Finance. New York Times, February 18, 1919.

[4] These percentages would be somewhat less, were the actual tax receipts given instead of the total revenues. See note (2).

[5] Inasmuch as among expenditures there are also included outlays in connection with public businesses and undertakings and since figures of tax receipts do not include revenues derived therefrom, the comparison between tax receipts and TOTAL expenditures cannot be considered strictly accurate. In many cases, expenditures are only itemised a few years after the outlay has been made. Therefore, in order to place all countries on a comparable basis, attention must be drawn to the relation between tax receipts and TOTAL expenditures, even tho the results are not strictly comparable.

[6] Data not available.

[7] See note 6.

[8] Actual payments.

[9] Loans to Allied countries totaled $574 millions on Sept. 1, 1918, but in all probability these amounts are not included in expenditures.

Revenues and Expenditures of United States[1]

(Million dollars)

	Pre-war period				War period		
	1913–1914	1914–1915	1915–1916	July 1 1916–April 5, 1917	April 6, 1917–June 30, 1917	1917–1918	1918–1919
Receipts from taxation:							
A. Direct							
Income and profits taxes	61	80	125	33	146	2,314	3,019
B. Indirect							
Customs	292	210	213	160	65	180	184
Miscellaneous internal revenue	319	335	388	306	323	872	1,297
Total	672	625	726	499	534	3,366	4,500
Miscellaneous revenue	63	73	54	51	31	293	646
Panama Canal	.....	.....	.....	.....	2	6	6
Total revenue	735	698	780	550	567	3,665	5,152
Disbursements:[2]							
Ordinary	700	731	723	719	317	7,875	14,936
Foreign loans	.....	.....	.....	.....	885	4,738	3,479
Other special	.....	.....	.....	.....	14	84	100
Total	700	731	723	719	1,216	12,697	18,515
Ratio of direct taxes to total receipts from taxation	9.1	12.8	17.2	6.6	27.3	68.7	67.1
Ratio of receipts from taxation to total disbursements	96.0	85.5	100.4	69.4	43.9	26.5	24.3
Ratio of total receipts from taxation to total disbursements, exclusive of foreign loans	96.0	85.5	100.4	69.4	161.3	42.3	29.9

[1] Compiled from Annual Reports of the Secretary of the Treasury and daily Treasury statement.

[2] Excluding Panama Canal.

Revenues and Expenditures of Great Britain [1]

(Thousand pounds)

	Year ended Mar. 31, 1914	Aug. 1, 1914 to Mar. 31, 1915	Year ended			
			Mar. 31, 1916	Mar. 31, 1917	Mar. 31, 1918	Mar. 31, 1919
Direct taxes:						
Land tax	690	2,300	680	653	665	630
Inhabited house duty	1,994		1,975	1,888	1,960	1,850
Excess profits duty	.....	.....	188	141,615	220,214	285,028
Property and income tax and super tax	47,241	62,463	129,161	205,678	239,509	291,186
Land value duties	735	362	369	524	685	664
Total direct taxes	50,660	65,125	132,373	350,356	463,033	579,358
Indirect taxes:						
Customs	35,569	27,125	59,576	70,710	71,261	102,780
Excise	39,658	30,721	61,208	56,488	38,772	59,440
Estate, etc., Duties	27,465	18,010	30,938	31,192	31,674	30,262
Stamps	9,983	4,518	6,780	7,764	8,300	12,438
Total indirect taxes	112,675	80,374	158,502	166,154	150,007	204,920
Other receipts of the exchequer	34,908	26,260	45,892	56,916	94,195	104,743
Total receipts	198,243	171,759	336,767	573,428	707,235	889,021
Expenditures	197,493	498,660	1,559,158	2,198,113	2,696,221	2,579,301
Ratio of direct taxes to total receipts from taxation	31.0	44.8	45.5	67.8	75.5	73.9
Ratio of receipts from taxation to expenditures	82.7	29.2	18.7	23.5	22.7	30.4
Ratio of total receipts to expenditures	100.4	34.4	21.6	26.1	26.2	34.5

[1] Compiled from Statesman's Yearbook, 1919, and London Economist. Tax figures are net for the fiscal years 1914, 1916, and 1917; all other tax figures represent exchequer receipts.

Revenues and Expenditures of France[1]

(Million francs)

	Calendar year 1913	Aug. 1, 1914 to Dec. 31, 1914	Calendar year 1915	Calendar year 1916	Calendar year 1917	Calendar year 1918
Direct taxes:						
"Direct contributions"[5]	1,148	345	823	851	955	657
"Similar duties"[5]	59	27	39	42	63	70
Tax on payments	.....	.....	.....	.....	.....	210
Excess profits tax	.....	.....	.....	.....	192	714
Tax on income from personalty	149	45	157	181	242	253
Income tax	.....	.....	.....	.....	.....	.....
Total direct taxes	1,356	417	1,019	1,074	1,452	1,904
Indirect taxes:						
Registration duties	840	118	464	525	720	924
Stamp duties	255	39	146	158	172	216
Tax on exchange transactions	17	.....	1	2	3	3
Taxes on consumption	217	70	237	204	375	268
Customs duties[3]	697	145	764	1,400	1,511	1,185
"Indirect" taxes[4]	1,283	382	1,025	1,085	1,304	1,402
Total indirect taxes	3,309	754	2,637	3,374	4,085	3,998
Monopolies	407	136	290	330	399	447
Domains, etc.	144	62	186	240	254	285
Total receipts	5,216	1,369	4,132	5,018	6,190	6,634
Expenditures	5,067	6,589[2]	22,804[2]	29,356	36,345	30,419
Ratio of direct taxes to total receipts from taxation	29.1	35.6	27.9	24.2	26.3	32.3
Ratio of total receipts from taxation to expenditures	92.1	17.8	16.0	15.2	15.2	15.0

[1] Compiled from the Bulletin de Statistique et de Législation Comparée.

[2] Credits opened. Actual expenditures were in all probability somewhat less than the figures seem to indicate.

[3] Not including sugar and salt.

[4] Including taxes on lucifer matches, tobacco, and gunpowder.

[5] Includes "centimes additionels" for local purposes.

Revenues and Expenditures of Italy [1]

(Million lire)

Nature of revenue receipts	Years ended June 30				
	1914	1915	1916	1917	1918 [2]
Direct taxes:					
Tax on unimproved property	82	86	91	99	113
Tax on improved property	113	123	123	135	145
Tax on personal property	346	334	456	461	488
War centimes	.....	.....	51	219	275
Excess profits tax	.....	.....	.....	108	452
Railroad tax	43	41	60	88	102
Miscellaneous	.....	.....	10	36	53
Total direct taxes	584	634	781	1,146	1,628
Indirect taxes:					
Succession duties	56	58	72	83	90
Stamp and registration duties	176	177	202	293	383
Consumption taxes	538	445	641	922	969
Miscellaneous	62	63	64	72	115
Total indirect taxes	832	743	979	1,370	1,557
State monopolies	547	573	701	846	1,129
Posts, telegraph and telephone	170	171	216	265	282
Net profits from railroad operations	28	.....	9	85	4
State patrimony	17	16	16	17	21
Miscellaneous	84	18	.....	3	24
Total revenue receipts	2,262	2,155	2,702	3,732	4,645
Expenditures	2,688	5,395	10,625	17,595	25,340 [3]
Ratio of direct taxes to total receipts from taxation	41.2	46.0	44.4	45.5	51.1
Ratio of receipts from taxation to expenditures	52.7	25.5	16.6	14.3	12.6

[1] Figures for 1914–18 are taken from Bulletin de Statistique et de Législation Comparée, "Exposé Financier de M. Francisco Nitti, Ministre du Trésor," February, 1919, pp. 308, 309.

[2] Provisional figures.

Revenues and Expenditures of Germany[1]

(Million marks)

	1913	1914	1915	1916	1917
Revenues:					
Imperial business undertakings	140.92	Def. 53.60	Def. 42.20	Def. 50.51	Def. 139.80
Customs, taxes, etc.	2,076.14	1,767.04	1,469.56	2,014.86	3,117.06
Available from defense fund	0.82	637.39	307.84	19.52	10.37
War levy	.....	.....	.....	37.96	4,035.50
Additions thereto	.....	.....	.....	7.60	806.90
Total	2,217.88	2,350.83	1 735.20	2,029.43	7,830.12
Expenditures:					
Ordinary	2,426.52	1,653.24	1,785.50	2,973.85	6,803.62
Extraordinary	111.44	7,000.59	23,922.08	24,749.34	42,203.46
Total	2,537.96	8,653.83	25,707.58	27,723.19	49,097.08
Ratio of total revenues to total expenditures	87.4	27.2	6.7	7.3	15.9
Ratio of total receipts from taxation to total expenditures	81.8	27.8	6.9	7.5	16.2

[1] Official figures, analyzed by Dr. Kurt Singer in Wirtschaftsdienst, April 4, 1919.

Revenues and Expenditures of Japan [1]

(Million yen)

	Fiscal years ending March 31					
	1914	1915	1916	1917	1918	1919
Direct taxes:						
Land tax	75	75	74	73	52	53
Income tax	36	37	38	51	56	87
Business tax	27	29	21	23	26	34
War profits tax	.....	.....	.....	.....	.....	54
Total	138	141	133	147	134	228
Indirect taxes:						
Tax on consumption of sugar	21	23	23	27	26	31
Tax on textile fabrics	20	17	16	17	17	21
Tax on liquors	93	96	85	90	80	91
Customs duties	74	44	32	36	40	63
Stamps	31	29	32	39	47	59
Miscellaneous	23	23	24	31	28	30
Total	262	232	212	240	238	295
Proceeds from public undertakings and state property	140	136	168	208	114	141
Total revenue [2]	540	509	513	595	486	664
Total expenditures	574	648	583	591	584	807
Ratio of direct taxes to total receipts from taxation	34.5	37.8	38.6	38.0	36.0	43.6
Ratio of total revenue [2] to total expenditures	95.6	78.5	88.0	100.7	83.2	82.3
Ratio of tax receipts to total expenditures	69.7	57.6	59.2	65.5	63.7	64.8

[1] Compiled from Financial and Economic Annual of Japan, 1918, and Japan Financial and Economic Monthly, April, 1919.

[2] Exclusive of miscellaneous income and extraordinary revenue which embraces transfers from last fiscal year, loans, etc.

Revenues and Expenditures of Canada[1]

(Million dollars)

	Fiscal years ending March 31					
	1914	1915	1916	1917	1918	1919[a]
Receipts from taxation:[2]						
Customs	105	76	99	134	144	147
Excise	21	21	22	24	27	30
War tax	.....	.....[4]	4	16	25	57
Total	126	97	125	174	196	234
Post office	13	13	19	21	21	21
Railways	13	12	18	24	27	38
Dominion lands	3	3	2	4	5	17
Interest on investments	2	3	3	3	5	
Other items	6	5	5	7	7	
Total receipts	163	133	172	233	261	310
Expenditures, ordinary	127	136	130	149	178	262
Expenditures, extraordinary for war purposes[3]	.....	61	166	307	344	450
Total expenditures	127	197	296	456	522	712
Ratio of total receipts to total expenditures	128.4	67.5	58.1	51.1	50.0	43.5
Ratio of tax receipts to total expenditures	99.2	49.2	42.2	38.2	37.5	32.9

[1] Compiled from the Canada Year Book, 1919, unless otherwise indicated.

[2] Because of lack of information as to details, it has been impossible to segregate direct from indirect taxes.

[3] From the Budget speech of Sir Thomas White on June 5, 1919. Cf. Monetary Times, June 6, 1919, pp. 26 et seq.

[4] Receipts were $98,057.

III. Note Circulation

The total note circulation of thirteen belligerent powers at the most recent date totals $74,969 millions as compared with $4,998 millions before the outbreak of the war. In the same interval the amount of note circulation per head of population rose from $7.95 to $119.20. The highest figures per capita in the pre-war period is shown by the Allied group, while at the most recent date the tables are reversed, the Central Powers having a circulation larger by 16.1 per cent.

Of all the nations, Russia leads in its note circulation per capita at the most recent date, altho its order was third last before the war. France follows, with Austria-Hungary (combined) closely behind. The increase in the note circulation of the larger countries may roughly be put as follows: Russia, forty-fivefold; Germany and Austria-Hungary (combined), each eighteenfold; Great Britain, ninefold; France, United States and Italy, each fourfold; and Japan, threefold. The subjoined table compares the note circulation, in absolute and per capita figures, before the war and at the most recent date.

The extent to which the gold standard was abandoned during the war may be seen from the ratio of metallic reserves of the banks of issue to their combined note and deposit liabilities. In the case of Austria-Hungary, Russia, and Turkey, the gold holdings of the banks of issue have dwindled to so low a figure, and the outstanding liabilities against which the metal was supposed to serve as a reserve have grown to such heights, that practically no remnant of a gold basis is left. In the Allied group, with the notable exception of Russia, the Italian banks of issue show the sharpest decline in

SUMMARY OF NOTE CIRCULATION OF PRINCIPAL BELLIGERENTS[11]

(Million dollars)

A. *Allied Powers*

Country	Before entering the war			At most recent date		
	Date	Total note circulation	Dollars per capita	Date	Total note circulation	Dollars per capita
United States.	July 1, 1914	715[1]	6.70	Aug. 1, 1919	3,340[2]	31.32
Great Britain.	July 29, 1914	223[3]	4.84	Aug. 6, 1919	2,331[14]	50.58
France.....	July 30, 1914	1,290	32.49	Aug. 7, 1919	6,805	171.41
Italy.....	July 31, 1914	518	14.11	May 20, 1919	2,695[4]	73.40
Japan.....	Aug. 1, 1914	163	2.81	June 28, 1919	582[5]	10.03
Russia.....	Aug. 1, 1914	842	4.62	Aug. 31, 1919	38,474[6]	211.18
Belgium[13]	Mar. 19, 1914	186[7]	24.29	July 24, 1919	882	115.17
Greece.....	July 31, 1914	46[8]	9.29	June 13, 1919	257[15]	51.92
Total....	.....	3,983	8.26	.....	55,366	114.88

B. *Central Powers*

Germany.....	July 23, 1914	538[12]	7.93	July 7, 1919	10,109[9]	149.07
Austria and Hungary.....	July 23, 1914	432	8.25	July 15, 1919	8,400[16]	160.40
Turkey.....	July .., 1914	9[10]	0.42	April .., 1919	704	33.09
Bulgaria.....	Sept. .., 1913	36[10]	6.52	Mar. .., 1919	390[17]	70.68
Total....	.....	1,015	6.91	.....	19,603	133.38
Grand total	.....	4,998	7.95	.....	74,969	119.20

[1] National bank notes only.
[2] National bank, federal reserve and federal reserve bank notes.
[3] Includes also the average weekly circulation, for the month of July, 1914, of the private, joint-stock, Scotch and Irish banks of issue. Cf. London Bankers', Insurance Managers', and Agents' Magazine, September, 1914, p. 427.
[4] Consists of the following (million lire): state notes, 2,089, and Treasury notes, 199, as of November 30, 1918 (cf. Giornale degli Economisti, January, 1919, p. 1); notes of the Banca d' Italia (as of May 20, 1919), 9,265; of the Banco di Napoli (as of March 10, 1919), 1,989; and notes of the Banco di Sicilia (as of March 10, 1919), 421. Gazetta Ufficiale del Regno d' Italia, June 25, 1919.
[5] Includes government notes in circulation as of May 31, 1919, 110 million yen.
[6] Estimated. See text, infra. Excludes notes in circulation of governments other than that of Bolsheviki.
[7] Statesman's Yearbook, 1915, p. 729.
[8] L'Economiste Européen, December 6, 1918, p. 366.
[9] Includes 278 million marks of notes of the other four banks of issue as of December 31, 1918.
[10] Figures for the Ottoman Bank of Constantinople. See text, infra.
[11] Where no references are indicated, the sources of information are identical with those furnished in the text proper.
[12] Includes Treasury notes, estimated at 200 million marks.
[13] Statesman's Yearbook, 1916.
[14] Includes also the average weekly circulation of the other banks of issue for the month ended May 17, 1919. London Bankers', Insurance Managers', and Agents' Magazine, July, 1919, p. 107.
[15] Exclusive of Ionian Bank circulation and forced currency.
[16] Exclusive of any notes that may possibly have been issued by the Communist government.
[17] L'Economiste Européen, May 9, 1919, p. 293. Statement by the Minister of Finance Daneff.
[18] Figures are for the National Bank of Belgium.

the ratio of their metallic reserves to their note and deposit liabilities. The lightest effects of disorganized banking have been experienced by the Federal Reserve System of the United States and the Bank of Japan.

A detailed study of the banking situation in the principal belligerent countries follows.

United States

From August 1, 1914 to September 10, 1919 the excess of gold imports over exports was $919 millions whereas the excess of silver exports over imports during the same period was $389 millions. Very heavy purchases made by European belligerents in this country necessitated the shipment of a large amount of gold to liquidate adverse balances, especially during the period of neutrality in 1915 and 1916. From $1,890,678,304 on July 1, 1914, the stock of gold in the United States rose to $3,088,904,808 in April, 1917, when we entered the war. The total stock of money in the United States exclusive of that held by the United States Treasury, increased from $3,419,168,368 on July 1, 1914, to $4,702,130,941 on April 1, 1917, representing a rise of $1,282,962,573, of which $883,481,028 was in gold. After our entrance into the war, while foreign credits were arranged for Allied countries which obviated the necessity of shipping gold for the most part, silver was being exported from this country in fairly large amounts in settlement of adverse trade balances, especially in the Orient.

Interesting facts may be observed in a study of the figures of notes in circulation. Whereas the circulation of gold coin increased considerably during the war period, the circulation of standard silver dollars remained practically stationary; at the same time, the amount of gold and silver certificates in circulation de-

creased considerably. The explanation of the two phenomena can be traced to different causes. For the purpose of conserving the gold supply of this country and aiding the settlement of adverse trade balances, Congress enacted the Pittman Act, by the provisions of which the Secretary of the Treasury was authorized to melt 250,000,000 silver dollars and sell them as bullion at not less than one dollar per ounce. Inasmuch as silver certificates, issued on the basis of a deposit of silver dollars held in the Treasury, would have to be recalled from circulation, Congress permitted the Federal Reserve Board to issue in their place federal reserve notes of small denominations, not exceeding the amount of the silver dollars melted or broken up and sold as bullion. These federal reserve notes are based on United States certificates of indebtedness or one-year gold notes, with renewal privileges at the discretion of the Secretary of the Treasury. The Director of the mint is compelled, as soon as practicable, to purchase silver at one dollar per ounce to restore the amount melted or broken up; and as soon as this silver is coined, federal reserve notes of equal amount must be retired.

The retirement of gold certificates, on the other hand, was due to an amendment to the federal reserve act, to date June 20, 1917, which provided that the entire lawful reserve of member banks must be carried with federal reserve banks and at the same time authorized the Federal Reserve Board to exchange federal reserve notes for gold. The primary purpose of this amendment was to centralize the gold holdings in the federal reserve banks.

In the subjoined tables, the amount of money in circulation in the United States and the gold reserves, total reserves, gross deposits and note circulation of the Federal Reserve System are shown for various dates.

Money in Circulation in the United States[1]

(Million dollars)

Circulating medium	July 1, 1910	July 1, 1913	July 1, 1914	July 1, 1915	July 1, 1916	July 1, 1917	July 1, 1918	July 1, 1919
Gold coin (including bullion in treasury)	591	608	612	590	637	1,036	1,108	1,173
Gold certificates	803	1,004	1,026	1,073	1,414	1,392	828	542
Standard silver dollars	72	72	70	65	66	72	77	81
Silver certificates	479	469	479	482	490	477	382	170
Subsidiary silver	135	154	160	159	171	194	217	232
Treasury notes of 1890	4	3	2	2	2	2	2	2
United States notes	335	338	338	332	342	336	340	333
Federal reserve notes	.....	.....	.....	81	173	545	1,712	2,494
Federal reserve bank notes	.....	.....	.....				15	164
National bank notes	683	716	715	785	729	710	704	650
Total	3,102	3,364	3,402	3,569	4,024	4,764	5,385	5,841
Dollars, per capita	34.33	34.56	34.35	35.44	39.28	45.74	50.86	54.28

[1] The information is taken from monthly circulation statements of the Treasury Department and from annual reports of the Secretary of the Treasury. The money in circulation is arrived at by subtracting from the general stock of money, the amounts held in the Treasury as assets of the government and the amounts held by the federal reserve banks and federal reserve agents against issues of federal reserve notes.

FEDERAL RESERVE BANK[1]

(Million dollars)

	Total gold reserves	Legal tender notes, silver, etc.	Total reserves	Net deposits	Federal reserve notes in circulation	Ratio of total reserves to net deposit and federal reserve note liabilities
December 31, 1914	241	27	268	256	16	98.5
December 30, 1915	542	14	556	394	189	95.3
June 30, 1916	543	27	570	538	152	82.6
December 29 1916	736	18	754	651	275	81.4
June 29, 1917	1,295	40	1,335	1,262	509	75.4
December 28, 1917	1,671	50	1,721	1,458	1,246	63.6
June 28, 1918	1,949	57	2,006	1,530	1,722	61.7
December 27, 1918	2,090	56	2,146	1,553	2,585	50.6
June 27, 1919	2,148	68	2,216	1,751	2,499	62.1
October 31, 1919	2,138	68	2,206	2,726[2]	2,753	47.9

[1] Compiled from the Federal Reserve Bulletin.

[2] Gross deposits.

Great Britain

As is well known, the Bank Act of 1844 provided for the expansion of note circulation only through the Banking Department of the Bank of England. All notes issued by the latter above the statutory maximum of £18,450,000 had to be covered pound for pound by a deposit of gold. The Issue Department was made independent of the Banking Department and the former issued notes only upon the receipt of gold.

On August 6, 1914 Parliament suspended the Bank Act, enabling the Bank of England to adjust its loans to meet the emergency occasioned by the outbreak of the war. In addition, Parliament passed the Currency and Bank Notes Act, permitting the Bank of England to issue notes, in the denomination of £1 and 10*s*. to the banks of issue of Scotland and Ireland, post office and trustees' savings banks and bankers, as a loan at 5 per cent up to 20 per cent of their combined deposit and current liabilities. These notes were made unlimited legal tender. Fear of possible hoarding of gold and the desire to have notes below £5 (which was the smallest denomination of the Bank of England notes) were mainly responsible for the enactment of this measure.

Against the Currency notes thus issued, gold coin and bullion and government securities were deposited. Beginning with a cover of £3,000,000 in gold coin and bullion on September 9, 1914, against a total of £27,113,128 notes outstanding, the metallic reserve rose to £28,500,000 on May 12, 1915; since which date it has remained stationary throughout the war. The ratio of gold coin and bullion to total currency notes outstanding rose from 11.1 per cent on September 9, 1914, to 74.1 per

Currency Notes Account

(Thousand pounds)

Date	Notes outstanding	Reserve of coin and bullion	Ratio of reserve to notes outstanding	Governemnt securities	Balance in banks[1]
September 9, 1914	27,113	3,000	11.1	10,923	13,089
December 30 1914	38,478	18,500	48.1	9,923	10,054
June 30, 1915	46,576	28,500	61.3	9,585	8,491
December 29, 1915	103,125	28,500	27.6	54,620	20,214
June 28, 1916	122,099	28,500	23.4	88,157	5,441
December 27, 1916	150,144	28,500	19.0	118,102	4,542
June 27, 1917	161,673	28,500	17.6	132,484	689
December 26, 1917	212,782	28,500	13.4	186,636	2,354[2]
June 26, 1918	252,912	28,500	11 3	229,751	5,328[2]
December 24, 1918	323,644	28,500	8.9	304,633	9,489[2]
June 25, 1919	342,309	28,500	8.3	327,321	13,521[2]
September 10, 1919	331,442	28,500	8.8	314,177	12,365[2]

[1] Less amounts in Investment Reserve Account.

[2] This amount represents the excess of notes in the Investment Reserve Account over the amounts in banks.

cent on March 3, 1915, the latter being the highest point it ever reached. After 1915, with a stationary reserve and rapidly increasing issues, the ratios declined, and at the present time it is practically 8 per cent. The notes outstanding and reserves on various dates are here appended.

The rise in currency note issues was accompanied by an expansion of the circulation of Bank of England notes. In the first week of the war, from July 29, 1914, to August 7, 1914, the increase in notes was £6,399,070 and the decline in gold, £10,509,475. From August 7, 1914, to the middle of 1916, the circulation changed but slightly but, toward the end of 1916, the rise became more marked. From December 27, 1916, to December 26, 1917, the increase was £6,268,430, representing two-thirds the amount of change from July 29, 1914, to the end of 1916; and from December 26, 1917, to December 25, 1918, the increase was £24,362,965, or 50 per cent larger than the total change during the first three and one-half years of the war.

Along with the increase in the bank note circulation, there followed changes in other items of the balance sheet. While public deposits did not keep pace with the growth of governmental operations, the amount of other deposits reflected the unprecedented business activity of the war period. The amount of coin and bullion showed fluctuations upward and downward at various times, with the general curve running distinctly in the upward direction. The following table affords a brief summary of the principal items in the balance sheet of the Bank of England during the war as compared with a pre-war period.

BANK OF ENGLAND[1]

Date	Bank note circulation[2]	Public deposits	Other deposits	Government securities	Other securities	Reserve of notes and coins	Coin and bullion	Ratio of reserve to liabilities[3]
Jan. 1, 1913...	£29,200,255	£14,164,961	£52,954,726	£14,835,422	£49,629,901	£20,550,232	£31,300,487	30⅛
Dec. 31, 1913...	29,607,635	10,256,489	61,087,066	13,199,062	52,137,739	23,825,514	34,983,149	33⅛
July 29, 1914...	29,706,350	12,713,217	54,418,908	11,005,126	47,307,530	26,875,194	38,131,544	40
Dec. 30, 1914...	36,139,180	26,932,515	128,055,376	14,807,551	106,236,107	51,804,430	69,493,610	33⅛
July 7, 1915...	35,073,135	67,898,980	139,859,352	51,043,491	137,918,307	36,641,012	53,264,147	17⅛
Dec. 29, 1915...	35,209,255	49,677,317	111,972,557	32,840,016	112,075,710	34,617,052	51,476,407	21⅛
July 5, 1916...	36,366,185	58,949,045	103,606,994	42,187,454	95,806,787	42,405,582	60,321,767	26
Dec. 27, 1916...	39,675,535	52,116,381	126,726,657	57,187,707	106,461,404	33,079,380	54,304,915	18⅛
July 4, 1917...	40,202,705	41,672,768	130,579,220	45,500,261	111,080,511	33,489,574	55,242,279	19⅛
Dec. 26, 1917...	45,943,965	42,009,347	124,161,430	58,303,023	94,888,724	30,843,500	58,337,469	18⅛
July 3, 1918...	54,902,910	38,179,431	152,067,775	66,237,732	112,936,818	28,880,648	65,333,558	15⅛
Dec. 25, 1918...	70,306,930	23,642,681	149,036,977	71,105,744	92,140,127	27,253,834	79,110,764	14⅛
July 2, 1919...	79,947,855	24,557,680	166,924,589	98,702,306	83,493,763	27,070,008	88,567,863	14⅛
Sept. 10, 1919...	81,127,495	23,077,905	89,363,777	21,657,056	83,297,031	25,587,765	88,265,260	22⅛

[1] Compiled from the London Economist. [2] Exclusive of Bank Post Bills. [3] Reserve against deposits, both public and other.

France

The outstanding feature of French banking is that expansion of credit is accompanied by extension of note issues. The increase in the note circulation of the Bank of France is not due primarily to an extraordinary commercial demand, altho this is a contributing factor, but to the enormous increase in the advances of the bank to the French government. These advances are secured by obligations of the state. The latter receives credits upon the basis of which notes of the Bank of France are issued wherewith to pay the creditors of the government.

From 200 million francs before the war, the advances to the state have risen to 23,400 millions on June 26, 1919, and the notes in circulation were increased from 6,683 million francs to 35,152 millions, as may be observed from the subjoined table:

BANK OF FRANCE[1]

(Million francs)

Date	Advances to the government	Gold in vaults and abroad	Silver in vaults	Notes in circulation	Current accounts of the treasury	Other current accounts	Ratio of metallic reserve to combined note and deposits liabilities
Jan. 2, 1913	200	3,195	670	5,933	188	572	57.75
Jan. 2, 1914	200	3,508	639	6,035	328	713	58.61
July 30, 1914	200	4,141	625	6,683	383	948	59.47
July 1, 1915	6,400	3,932	372	12,216	82	2,365	29.35
Dec. 30, 1915	5,200	5,015	352	13,310	174	2,114	34.41
June 29, 1916	8,100	4,763	344	15,809	38	2,273	28.18
Dec. 28, 1916	7,500	5,076	295	16,679	15	2,260	28.34
June 28, 1917	10,800	5,288	260	19,823	34	2,734	24.56
Dec. 27, 1917	12,700	5,352	248	22,337	252	2,914	21.96
June 27, 1918	18,650	5,424	259	28,423	37	4,019	17.50
Dec. 26, 1918	17,350	5,478	318	30,250	112	2,366	17.71
June 26, 1919	23,400	5,551	304	34,443	49	3,362	15.47
Aug. 14, 1919	23,500	5,572	298	35,152	86	2,879	16.00

[1] Compiled from L'Economiste Européen. The note circulation maximum was raised to 36 billion francs by a bill signed February 25, 1919 (Bulletin de Statistique et de Législation Comparée, February, 1919, p. 213) and again to 40 billion francs in July (L'Economiste Européen, July 18, 1919, p. 40).

The decline in gold and silver holdings of the Bank of France was very marked during the first year of the war and while the gold reserve began slowly to rise in the second year until it reached a much higher level than at any time prior to the outbreak of hostilities, the silver reserve continued to fall until a turning point was reached in the first half of 1918. The silver holdings are still less than one-half of what they were on July 30, 1914.

In addition to the notes of the Bank of France, credit money is issued by the Bank of Algiers. The total notes in circulation of the Bank of Algiers rose from 594 million francs on October 31, 1917, to 884 millions on October 31, 1918, and 948 millions on March 1, 1919.[1]

ITALY

In addition to the Banca d' Italia, there are two other banks of issue in Italy, the Banco di Napoli and Banco di Sicilia. Soon after the outbreak of the war, these three banks began to issue notes not only for commercial purposes as heretofore but also for government account. Whereas the circulation of the former class rose from 2,183 million lire on July 31, 1914, to 4,357 millions on November 30, 1918, the bank notes for the needs of the government reached 7,140 millions on the latter date. The bank notes issued for government account do not, however, comprise the total circulation for which the Treasury is responsible, for state notes (bilietti di Stato) and treasury notes (buoni di cassa) are also in circulation. The state notes, against which there was a reserve of 165 million lire in gold on November 30, 1918, resemble our "greenbacks" to a large extent and date

[1] The maximum note circulation was gradually increased from 400 million francs authorised by the law of August 5, 1914, to 1100 million francs by the law of March 28, 1919. Cf. L'Economiste Européen, January 24, 1919, pp. 58, 59.

back to the pre-war period; the treasury notes are of recent origin, having a silver cover of 134 millions on November 30, 1918. The total amount of notes in circulation which form a part of the debt of the Treasury rose from 499 million lire on July 31, 1914, to 9,428 millions on November 30, 1918. The Minister of Finance recently stated that the obligations of the Treasury on account of state and bank notes reached approximately 10,200 million lire on May 30, 1919.[1]

As is true of other belligerents, notably France, Austria-Hungary, and Russia, advances assumed an important place in assisting the Italian Treasury to tide over financial difficulties. On March 10, 1919, the advances of the three banks totaled 6,772 million lire. The largest increase occurred in the latter half of 1917 when the amount outstanding on June 20, 1917, was practically doubled by the end of the year.

The metallic reserves of the banks of issue rose from 1,490 million lire at the outbreak of the European conflict to 1,572 millions on July 31, 1915, but in the eleven-month period following, a decline of 193 millions took place, accompanied by a further decrease of 109 millions in the latter half of 1916. During the last year and one-half, the reserves have remained practically stationary in amount.

JAPAN

The present banking system of Japan dates back to November, 1872, when the National Bank Regulations were first promulgated, modeled after the National Bank Act of the United States. Originally the notes of the national banks were convertible into specie but later they were in fact rendered inconvertible in gold by restricting convertibility to government paper money

[1] London Economist, July 26, 1919, p. 136.

NOTE CIRCULATION AND RESERVES OF ITALY [1]

(Million lire)

	Advances to the state	State notes issued	Bank notes for the needs of commerce	Bank notes for the needs of government	Total note circulation	Metallic reserve for notes of the state	Metallic reserve of the three banks of issue	Current accounts of the three banks of issue [4]	Ratio of metallic reserve of the state to state notes	Ratio of metallic reserve of banks of issue to their combined note and current account liabilities
July 31, 1914[2]	.....	499	2,183	.....	2,682	132	1,400	213	26.5	62.2
July 31, 1915	1,037	835	1,989	1,737	4,561	155	1,572	876	18.6	34.2
June 30, 1916	1 457	1,136	2,158	2,158	5,451	169	1,379	521	14.9	28.5
December 31, 1916	1,794	1,318	2,458	2,554	6,330	168	1,270	501	12.7	23.0
June 30, 1917	2,595	1,460	2,521	3,295	7,276	167	1,175	567	11.4	18.4
December 31, 1917	5,147	1,841	2,592	5,833	10,266	167	1,198	949	9.1	12.8
September 30, 1918	6,182	2,034	3,405	6,882	12,321[3]	165	1,165	965	8.1	10.4
October 31, 1918	6,394	2,046	4,192	7,094	13,332[3]	170	1,164	1,084	8.3	9.4
November 30, 1918	6,440	2,089	4,357	7,140	13,586[3]	165	1,164	861	7.9	9.4
December 31, 1918	6,466	.....[5]	11,750		.....[6]	.....[5]	1,166	1,079	.....[5]	9.1
March 10, 1919	6,772	.....[5]	11,365		.....[6]	.....[5]	1,162	1,044	.....[5]	9.4
December 31, 1919										

[1] Compiled from Giornale degli Economisti et Rivista di Statistica; Revue Financière et Economique d' Italia; Gazetta Ufficiale del Regno d'Italia; and especially Bulletin de Statistique et de Législation Comparée, February, 1919, pp. 332, 339, and 340.

[2] Figures for the banks of issue are as of July 20, 1914.

[3] Exclusive of treasury notes issued, which amounted to 165 millions on September 30, 180 millions on October 31, and 199 millions on November 30, 1918. The silver reserves for these notes was on these respective dates, 97, 118, and 134 millions.

[4] Including current accounts of the Treasury.

[5] Data not available.

[6] See note 5.

only. This system worked fairly well as long as the government circulation was kept within reasonable bounds. In 1877, the great Satsuma rebellion took place, in quelling which the government incurred heavy liabilities. A large amount of paper money was issued and soon thereafter depreciation set in which made itself felt very rapidly. This costly experiment necessitated revision of the banking laws, which was begun in 1883 and completed in 1886.

Under the new system the national banks were deprived of their note-issuing power, which was transferred solely to the Bank of Japan. With the adoption of the gold standard in October, 1897, the notes of the Bank of Japan became convertible into gold.

In 1897 the government established the Bank of Taiwan on the Island of Formosa, which was granted the same privileges as the Bank of Japan, except that the notes of the Bank of Taiwan were convertible into silver instead of gold, because the special requirements of the native population necessitated the establishment of a central bank on a silver basis.[1] In 1904, however, the Bank of Taiwan was authorized to issue notes convertible into gold.

The rise in gold and silver holdings of the Bank of Japan assumed large proportions in 1916 and 1917. Japan, like the United States and a few neutral nations on the Continent, soon after the outbreak of the war found itself changing from an importing to an exporting country. Whereas the excess of exports of precious metals over imports was 20 million yen in 1915, the results for 1916 showed a surplus of imports over exports to the extent of 73 millions, which was increased to 238 millions in 1917.[2] The following table summarizes

[1] This bank extends its operations to South China and the islands of the Southern Pacific as well as to the Island of Formosa.

[2] L'Economiste Européen, June 6, 1919, pp. 346, 347.

the principal items in the balance sheet of the Bank of Japan.

BANK OF JAPAN [1]

(Million yen)

	Gold and silver reserves	Notes in circulation	Government deposits	Private deposits	Ratio of gold and silver holdings to combined note and deposit liabilities
August 1, 1914	219	327	138	15	45.63
December 26, 1914	219	360	125	15	43.80
December 25, 1915	249	396	254	26	36.83
December 30, 1916	414	611	361	29	41.36
December 29, 1917	656	824	582	34	45.56
November 30, 1918	721	940	982	44	36.67
December 28, 1918	726	1,091	1,048	54	33.11
June 28, 1919	705	1,057	1,192	41	30.79
July 26, 1919	728	967	1,222	30	32.81

RUSSIA

At the time of declaration of war, the amount of notes of the Bank of Russia in actual circulation was 1,634 million rubles, covered by a reserve of 1,601 millions in gold in Russia proper and 144 millions abroad. On October 16/29, 1917, when the Kerensky régime was ended, the circulation had reached 18,362 million rubles, covered by 1,295 million rubles in gold in Russia and 2,309 millions abroad. The latter balance was, however, fictitious in great part. To give added strength to the paper money already issued, the Minister of Finance in August, 1915, opened at London a credit of 2 billion rubles, bearing no interest, which was later considered a part of the legal reserve of the Bank of Russia abroad and against which credit notes of equal amount were issued.[2] Thus the gold cover of notes of

[1] Compiled from the London Economist and L'Economiste Européen, February 7, 1919, p. 95.

[2] Revue d' Economie Politique, January–February, 1919, pp. 13 et seq.

the Bank of Russia fell from 107 per cent at the beginning of the war to 7.1 per cent in the last days of the Provisional government (19.6 per cent, if the fictitious balance abroad is included). The principal items relating to the fiduciary circulation in the balance sheet of the Bank of Russia on various dates are here given.

BANK OF RUSSIA[1]

(Million rubles)

	Gold holdings	Balance abroad	Silver and subsidiary coin	Notes in circulation	Deposit and current accounts	Treasury account	Ratio of metallic cover to combined notes and deposit liabilities[2]
Dec. 23, 1913/Jan. 5, 1914	1,515	170	59	1,712	551	599	60.94
July 8/21, 1914	1,601	144	74	1,634	596	503	66.56
Dec. 23, 1914/Jan. 5, 1915	1,555	200	45	2,984	742	220	45.62
June 16/29, 1915	1,577	109	56	3,583	1,109	347	34.57
Dec. 23, 1915/Jan. 5, 1916	1,611	459	39	5,493	1,328	203	30.03
June 16/29, 1916	1,540	1,589	75	6,443	1,582	279	38.58
Dec. 23, 1916/Jan. 5, 1917	1,472	2,150	118	8,897	2,180	203	33.16
Oct. 16/29, 1917	1,295	2,309	178	18,362	3,252	205	17.33

Before the war the banking law allowed only 300 million rubles of bank notes to be issued without a gold cover. During the war ten ukases were promulgated from time to time raising this maximum to 16 billion rubles.

From the end of July, 1914, to the close of the same year, the average monthly issue of bank notes amounted to 238 million rubles; during 1915, 223 millions; in 1916, 290 millions; in January and February, 1917, 423 millions; in the four months following, 776 millions; in July and August, 1,172 millions; and during September, 1,892 millions.

[1] Compiled from the London Economist.

[2] In the metallic cover the balance abroad is included altho it was in great part fictitious and represented a small amount of specie to the credit of the Bank of Russia.

A study of the note issues for the seven months of 1916 as compared with the same period of 1917 shows the effect of the Revolution on the fiduciary circulation. With expenditures mounting to prodigious heights because of the Provisional government's aggressive military policy and with the flow of revenue practically stopped, reliance on the issue of paper money became more and more pronounced. From 4 to 5 million rubles a day before the war, the daily issues were increased to 60 or 70 million rubles toward the end of the Kerensky régime. In the seven months of 1917 in which the Provisional government assumed control, the note circulation was increased practically fourfold as compared with the same period in 1916, as is seen from the following monthly figures (in million rubles):

	1916	1917
March	179	1,031
April	135	476
May	167	729
June	248	869
July	248	1,070
August	246	1,273
September	765	1,892
Total	1,988	7,340

The Kerensky notes had to be forced into circulation. An agio on the notes issued by the Czarist government persisted throughout the period of the Revolution, the premium rising to about 40 per cent at the time of the Bolshevist *coup d' état*. As was true of other belligerent countries, gold and silver almost entirely disappeared from circulation.

After the fall of Kerensky and the rise of Bolshevist control, the note circulation received an impetus which had not been equaled in any other warring country. According to the Moscow *Gazeta Petchatnikoff*, new notes were issued from October 25, 1917, to January 1,

1918, to the extent of 6,544 million rubles, making the total circulation on the latter date 25,461 million rubles, inclusive of Czarist and Provisional government notes.[1] During 1918, the increase was 29,802 million rubles distributed as follows:

January	2,735
February	1,380
March	2,716
April	2,731
May	2,374
June	1,720
July	2,042
August	2,454
September	2,270
October	3,353
November	3,087
December	2,960
Total	29,802

According to Pravda, the monthly average of new note issues during the first quarter of 1919 was only two and one-half billion rubles, the explanation being that " the maintenance of this low figure, in spite of a great increase in the state's expenditures, is due to the partial abolition of money payments between state departments, the partial payment of state employees in kind and the satisfactory, if small, decreases of expenditure in certain departments." [2]

GERMANY

The Act of 1906 permitted the Reichsbank to issue notes in denominations of 50 and 20 marks, instead of 100 marks as heretofore.[3] These notes could be issued by any branch but were convertible into gold only in the main office in Berlin. In 1909 a law was passed making

[1] London Economist, June 28, 1919, pp. 1175, 1176. [2] Ibid.

[3] Besides the Reichsbank, there are four other banks of issue in Germany whose note operations are of little importance, namely the Bayerische Notenbank at Munich, Sächsische Bank at Dresden, Badische Bank at Mannheim, and Württembergische Notenbank at Stuttgart.

them legal tender. In addition, the imperial treasury notes, which had also been declared legal tender, issued in denomination 5 and 10 marks, were increased in 1913 from 120 million marks to 240 millions. The Reichsbank was allowed to include the latter notes in the one-third cover of lawful cash against its own issues. The remainder of the reserve could consist of discounted paper of not more than three months maturity. No maximum issue was provided in the law but if the cash cover fell below one-third, the excess was taxed at 5 per cent per annum, a certain quota or "contingent" being exempt from the tax.[1]

Loan bureaus, called *Darlehnkassen*, were also established soon after the opening of hostilities. These bureaus had been first tried in Prussia in 1846 and were again used in the wars of 1866 and 1870 with evident success. They made loans at 6½ per cent ordinarily (altho subscribers to the first German war loan were charged only 6 per cent), running from 3 to 6 months with the privilege of renewal. In the case of government securities, 70 to 75 per cent of the quotations on July 25, 1914, formed the basis of the loan; on other securities and on non-perishable goods, the percentage ran from 40 to 70. On the strength of these loans, loan bank notes (*Darlehnkassenscheine*) were issued in the denomination of 1, 2, 5, 10, 20, and 50 marks, which were not declared legal tender but were acceptable at par by imperial and state offices. The Reichsbank counted these notes as part of its lawful cash reserve. The smaller denominations of the loan bureau notes were particularly necessary because of the disappearance of fractional coins.

After July 31, 1914, the notes of the Reichsbank were no longer redeemed in gold by action of its directors,

[1] 550 million marks ordinarily and 750 millions at the end of quarterly periods.

and the law of August 4, 1914, officially relieved the bank of this obligation. Imperial treasury notes were also made legal tender, by a law of the same date, but non-convertible. In addition, the tax of 5 per cent on excess issues was suspended.

A study of the metallic holdings of the Reichsbank during the war shows what striking results were accomplished by concerted appeals to patriotism. The value of gold and silver in the vaults of the Reichsbank was only 1,691 million marks on July 23, 1914. Soon after the war was declared, a drive was made to concentrate as much gold and silver as possible in the hands of the bank and the popular response at the time was gratifying to the government. All agencies were employed to bring home the necessity of maintaining the financial stability of the empire by depositing gold and silver in every form with the Reichsbank. The result was that by the end of 1916 the gold and silver holdings were increased 845 million marks.

During the first half of 1917, a recession set in, due to the necessity of shipping gold to neutral countries to offset in part the unfavorable exchange situation. In the week ended September 23, 1918, gold to the amount of 100 million marks was received from the Bolsheviki in accordance with the Treaty of Brest-Litovsk. This increase was, however, of short duration. In the week ended November 15, 1918, there was a decline of 240 million marks because the conditions of the armistice required the shipment of gold for safe-keeping with the Allies. Since that date, the fall in gold holdings has been almost continuous, reaching a level far below that existing before the war.

The notes of the Reichsbank in actual circulation increased approximately fifteenfold from the beginning of the war to date. The greatest spurt was shown in the

month of December, 1918, when panicky conditions reigned immediately following the armistice. The notes in circulation were augmented in this month alone by 3,578 million marks. Altho conditions became normal in the first half of 1919, 6,900 millions of new notes were issued. On July 23, 1919, the total amount of notes in circulation was 41,501 million marks, exclusive of notes of the other four banks of issue (278 millions on December 31, 1918) and other emergency notes issued by district councils of individual municipalities after the armistice.[1] The two subjoined tables show the note circulation, deposits and metallic holdings of the Reichsbank and the total note circulation on various dates.

IMPERIAL BANK OF GERMANY[1]

(Million marks)

	Gold holdings	Silver holdings	Notes in circulation	Deposits	Ratio of metallic reserve to combined note and deposit liabilities[2]
Dec. 31, 1913....	1,445		2,593	793	42.68
July 23, 1914....	1,691		1,891	944	59.65
Dec. 31, 1914....	2,077	52	5,046	1,757	31.30
June 23, 1915....	2,385	52	5,225	1,614	35.63
Dec. 31, 1915....	2,445	32	6,918	2,359	26.70
June 30, 1916....	2,466	33	7,241	2,371	26.00
Dec. 30, 1916....	2,520	16	8,055	4,564	20.10
June 30, 1917....	2,457	64	8,699	5,693	17.52
Dec. 31, 1917....	2,406	182	11,468	8,050	13.26
June 29, 1918....	2,346	121	12,510	9,181	11.37
Dec. 31, 1918....	2,262	20	22,188	13,280	6.43
June 30, 1919....	1,116	20	29,968	13,730	2.60
Aug. 30, 1919....	1,103	20	28,492	10,885	2.85

[1] London Economist, November 2, 1918, p. 625.

[2] In the bank liabilities, only the circulation of the Reichsbank notes are included; but since the metallic holdings of the Reichsbank are the only reserves against the *Darlehnkassenscheine* as well as against the Reichsbank notes, the ratio of metallic holdings to combined note and deposit liabilities is much smaller than the percentages in this column indicate.

NOTES IN CIRCULATION IN GERMANY[1]

(Million marks)

	Reichsbank notes	Treasury notes	Loan bureau notes	Gold	Notes of the other four banks of issue[2]
July 23, 1914....	1,891	.....[9]	.....	1,691[7]	170[8]
Dec. 31, 1914....	5,046	.....[9]	446[3]	2,077	134
Dec. 31, 1915....	6,918	.....[9]	972[3]	2,445	.....[9]
Dec. 31, 1916....	8,054	352	2,874	2,520	.....[9]
June 30, 1917....	8,699	344	4,522	2,457	.....[9]
Dec. 31, 1917....	11,468	350	6,266	2,406	172
June 30, 1918....	12,510	346	7,582	2,346	182
Sept. 7, 1918....	13,804	348	8,280	2,348	.....[9]
Sept. 14, 1918....	14,044	346	8,388	2,348	.....[9]
Sept. 23, 1918....	14,430	348	8,494	2,448[5]	.....[9]
Sept. 30, 1918....	15,234	344	8,746	2,448	.....[9]
Oct. 7, 1918....	15,798	352	8,882	2,548	.....[9]
Oct. 15, 1918....	16,080	352	8,992	2,548	.....[9]
Oct. 23, 1918....	16,420	354	9,150	2,548	.....[9]
Oct. 31, 1918....	16,662	354	9,420	2,548	226
Nov. 7, 1918....	16,960	354	9,610	2,548	.....[9]
Nov. 15, 1918....	17,454	356	9,812	2,308[4]	.....[9]
Nov. 23, 1918....	17,906	356	9,876	2,308	.....[9]
Nov. 30, 1918....	18,610	358	9,990	2,308	.....[9]
Dec. 31, 1918....	22,188	356	10,243	2,262	278
June 23, 1919....	29,108	339	11,695	1,118	.....[9]
July 23, 1919....	29,345	359	11,797	1,112	.....[9]

AUSTRIA-HUNGARY

Advances of the Austro-Hungarian Bank to both the Austrian and Hungarian governments played a highly important rôle in financing the war. While details are lacking for the early years of the war, it is known that at the end of 1917, these advances amounted to 13,690

[1] Compilation of figures given in London Economist, unless otherwise indicated.

[2] Rise due to arrival of booty from Russia.

[3] London Economist, November 23, 1918, p. 709 and Wirtschaftadienst, January 31, 1919.

[4] Due to surrender for safe-keeping with the Allies of gold received from the Bolsheviki in accordance with the Treaty of Brest-Litovsk.

[5] Statistiches Jahrbuch für das deutsche Reich, 1915, p. 295.

[6] As of July 31, 1914.

[7] Gold and silver.

[8] Reichsbank Report for 1915.

[9] Data not available.

million crowns, augmented by additional 17,380 millions during 1918 and 1,771 millions in the first-half of 1919. These loans reflect themselves in the prodigious increase in the note circulation since the beginning of the war.

With a very marked decline in gold and silver holdings, the metallic cover for note and deposit liabilities has dwindled to insignificance. No other bank of issue of the principal belligerent powers, with the exception of Russia only, finds itself in such financial straits as the Austro-Hungarian Bank. The small amount of gold and silver in its vaults, almost one-fifth of that in reserve during the pre-war period, bears a relation of practically no consequence to the enormous burden of liabilities assumed by the bank during the war. The following affords a brief summary of the note and reserve situation on various dates.

AUSTRO-HUNGARIAN BANK [1]

(Million crowns)

	Advances to the dual governments	Gold holdings	Silver holdings	Note circulation	Deposits	Ratio of metallic holdings to combined deposit and note liabilities
Dec. 31, 1913	.....	1,241	262	2,495	.....[4]	60.24[5]
July 23, 1914	.....	1,238	291	2,130	.....[4]	71.78[5]
Dec. 31, 1915[2]	31,070	262	57	35,589	7,141	0.75
Feb. 2, 1919[3]	31,863	262	57	37,107	7,134	0.72
June 30, 1919	32,841	274	57	41,761	6,475	0.69
Aug. 15, 1919	32,954	271	56	42,722	6,511	0.66

[1] Compiled from the London Economist. No reports were made public in the interval between the time of declaration of war and the end of 1917.

[2] From Pester Lloyd, as quoted in British Board of Trade Journal, April 3, 1919, p. 454.

[3] From L'Economiste Français, March 8, 1919, p. 295.

[4] Data not available.

[5] Ratio of gold and silver holdings to note circulation only, exclusive of deposits.

TURKEY[1]

In 1910, a currency committee was appointed by the Finance Minister David Bey, to investigate the monetary situation. A report was submitted in 1911, the chief recommendations of which were (1) standardization of various kinds of piastre and elimination of discrepant valuations of this unit; (2) simplification of the currency by abolition of non-decimal valuation of the monetary unit; (3) establishment of a fixed and unchangeable monetary unit everywhere, viz., one gold pound to be considered the equivalent of 5 medjidies or 100 piastres; and (4) adaptation of the amount of cash in circulation to local needs. Before action could be taken on these suggestions, the war broke out.

In order to carry through its mobilization with the utmost speed, the Ottoman government required a large amount of cash. A law was passed August 3, 1914, making legal tender the notes regularly issued by the Imperial Ottoman Bank of Constantinople. The government tried to induce the bank to increase its note circulation from £T 2,000,000 to £T 4,000,000 and in return to furnish the Porte with a credit of £T 1,500,000. The bank refused and as a result, the government compelled the bank to place in circulation the following: (1) gold certificate notes covered by a new German and Austrian advance in gold, deposited in the Reichsbank and the Austro-Hungarian Bank and administered by the Dette Publique, and (2) currency notes payable to bearer covered by German treasury bills deposited at the Reichsbank and administered by the Dette Publique.[2] These notes were issued in low denominations

[1] Archiv für Wirtschaftsforschung in Orient, April, 1917, article by Dr. C. A. Schaefer.

[2] In April, 1917, a charter for a new national bank was issued by the Turkish government, to be called the Ottoman National Credit Bank, which will become the state bank and have the right of issuing notes after 1925 when the privileges of the Imperial Ottoman Bank will expire. Statesman's Yearbook, 1919, p. 1318.

and were made compulsory legal tender, redeemable in gold at a definite date after the declaration of peace.

Since no fixed ratio of silver to gold existed and since the shortage of small change was accompanied by a reduction in the discount of silver, 100 silver piastres were accepted as the equivalent of one gold pound, instead of 108 as heretofore. It was felt therefore that the repayment of currency notes would give rise to many difficulties after the war and that an immediate reform in the currency was advantageous and advisable.

The new currency law passed April 8, 1916, went into effect April 14, 1916. By its provisions, the currency was supposed to have been placed on a gold basis. The limits of legal tender were fixed at 300 piastres for silver coins and 50 piastres for nickel coins. Altho free coinage of silver was not expressly abolished, silver was reduced to the status of small change. The piastre, made of nickel and equivalent to 40 para, was made the monetary unit. Fractional denominations of 20, 10, and 5 para were also issued and the old silver piastres and half-piastres were replaced.

The silver coinage (purity 83 per cent) now consisted of 2, 5, 10, and 20 piastre pieces, the latter being the equivalent of one medjidie. The gold coinage (purity 916⅔ per cent) comprised pieces of 25, 50, 100, 250, and 500 piastres. The gold pound or its equivalent in paper was made equal to 100 piastres or 5 medjidies.

Altho specualtion in coinage was to be penalized and the government promised to establish money-changing offices in the capital and in the provinces in order to eliminate abuses of money-changers, the activities of the latter continued. The currency became greatly depreciated, the discount running as high as 500 per cent as compared with gold, and instead of being on a gold basis, Turkey is now almost completely in the throes of

a paper money régime.[1] The face value of imperial treasury notes in forced circulation throughout the Ottoman Empire is at present about 160 million Turkish pounds of which about 5 million are covered by gold belonging to the Turkish Public Debt Administration and the remainder is guaranteed by German treasury bills registered in Berlin in the name of the Public Debt Administration. The latter does not guarantee the reimbursement of these notes but undertakes that the amounts which it may receive in gold in payment of German treasury bills will be applied to the note circulation. Liquidation of the German treasury bills is spread over 12 years but since Germany is unlikely to to carry out this payment, paper money has fallen into further discredit.[2]

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[1] The agio on gold according to one writer fluctuated from 2 to 155 per cent in 1916; from 135 to 500 per cent in 1917; from 180 to 465 per cent in 1918; and from 362 to 461 per cent in the first three months of 1919. Cf. Jean Vergeot, "Le Papier-Monnaie en Turquie pendant la Guerre," in Revue d'Economie Politique, May-June, 1919, pp. 278-300.

[2] Cf. London Bankers' Magazine, May, 1919, p. 533.

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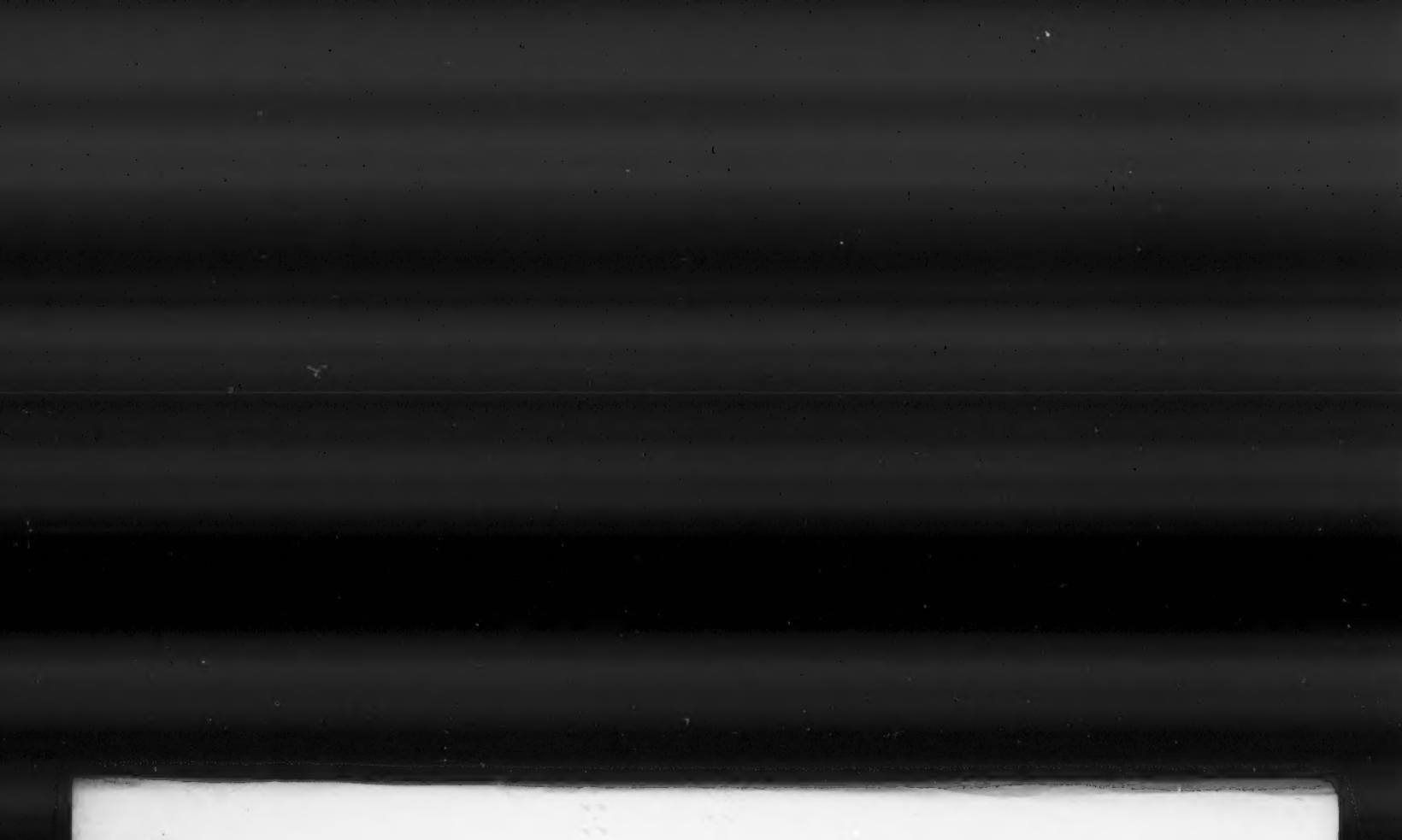
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